AMERICAN BUILDER

THE WORLD'S GREATEST BUILDING PAPER

Vol. 39. No. 3.

CONTENTS FOR JUNE, 1925

COPYRIGHT, 1925, BY AMERICAN CARPENTER & BUILDER CO.

Around the Family Table.....137
Editorial Page.....139
Present-Day Tendencies in Homes.....141
Cleveland's New Terminal.....147
ART SUPPLEMENT OF NOTABLE ARCHITECTURE (Duo-tone plates)....149-156
From Our Daily Foreign Mail.....157
American Hotel Development.....159
Advertising in Steel and Stone.....162
The Latest in Apartment Buildings.....164
Progress Transforms American Schools.....168
Garages Needed for Every Home.....170
Homes in Colors.....172
Mr. Radford Talks on Freedom of Action for Those Who Own Their Own Home.
BLUE RIBBON HOMES IN COLORS.....173-188
The Inverness.....Colorplate I
An English Type Home—Color Sketch of Modern Bathroom.
The Intervale.....Colorplate II
An English Cottage with Low Eaves and Prominent Gables—Color Sketch of Spacious Stair Hall.
The Independence.....Colorplate III
A Duplex or Double House; Five Rooms and Bath on a Side—Color Sketch of Attractive Bedroom.
A Rose Trellis Around a Group of Windows with a Pergola Treatment Above..Colorplate IV
A Rose Garden with Pergola Background.....Colorplate V
The Idaville.....Colorplate VI
Popular Western Bungalow with Wide Cornice and Exposed Rafters—Color Sketch of Well Furnished Sun Room.
The Iberia.....Colorplate VII
A Design from Old Mexico Suggestive of the Cliff Dwellers—Color Sketch of Comfortable Living Room.
Four Small Homes.....Colorplate VIII
The Idlewild; The Idalia; The Ivondale; The Inglenook.
Four Narrow Lot Houses.....Colorplate IX
The Inwood; The Itasca; The Ivy; The Iola.
The Indianhill.....Colorplate X
A Charming English Cottage with Seven Rooms and Sun Porch—Color Sketch Shows Glimpse of Living Room.
The Ingomar.....Colorplate IX
A Striking Spanish Design with Central Patio and Fountain—Color Sketch of Dining Room.
The Iroquois.....Colorplate XIV
A Substantial Colonial Home of Brick Construction—Color Sketch of Living Room Fireplace.
The Ivanhoe.....Colorplate XV
An English Design of Character Containing Eight Rooms—Color Sketch of Well Furnished Bedroom.
The Ingram.....Colorplate XVI
A Delightful English Cottage Design of Six Rooms—Color Sketch of Kitchen with Built-in Cases.
BUILDERS' REFERENCE AND CHECKING LIST.....189-203
A Specification Guide for All Classes of Buildings:
Private Dwellings.....190-194
Large Buildings.....195-203
Palatial Moving Picture Buildings Pay.....204
Industrial Buildings Planned for Efficiency....208
Nation's Prosperity Reflected in Its Banks....210
Splendid Club Buildings Going Up.....212
Cloistered Court a Feature of Church.....214
Hand Forged Colonial Hardware.....216
Landscape Architecture and the Home.....220
Grouping Early Flowering Shrubs.
Details of Home Building.....222
Detail 3—Windows.
Culver's War Memorial.....224
Sheet Metal Details.....226
Full Page Plate Showing Flashings Around Drains and at Concrete Roof Joints.
Save the Surface Department.....228
Why a Master Painter; Color Misting; Conservation and Construction; How to Decorate the Bedroom.
Modernized Store Buildings Get the Trade.....233
Build Hall Clocks for Profit.....236
What's New Department.....241-254
Instructions in Roof Framing.....256
Cutting the Common Rafter.
Better Plastering.....260
Applying the Plastering Base.
Something Different in Barns.....264
Textured Interior Walls.....266
Double Efficiency in Apartments.....272
The Carver-Economy Brick Wall.....275
Cinder Concrete Building Units.....282
Contractors' Equipment Section.....291-386
CHECKING LIST OF CONTRACTORS' EQUIPMENT.....292-297
Motor Trucks and Trailers.....302
Classified Index and Buyers Guide.....460 to 496
Advertisers Index.....499, 501

Published on the first day of each month by American Carpenter and Builder Co.; Wm. A. Radford, *President, Treasurer and Editor-in-Chief;* Wm. A. Radford, Jr., *Vice-President;* E. L. Hatfield, *Vice-President and General Manager;* Bernard L. Johnson, *Vice-President and Editor;* Roland D. Radford, *Secretary;* S. C. Kellenberger, *Dealer Service;* Delbert W. Smith, E. B. Wolfrom, C. R. W. Edgcumbe, L. H. Reich, O. H. Sutter, Cecil W. Blashill, H. P. Sessions, *Advertising Staff.*

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AROUND THE FAMILY TABLE

The Annual Number for 1925

WE are proud of this June issue of the AMERICAN BUILDER and we offer it to our readers—who represent the big general building field—with the hope and expectation that it will be very serviceable to them all through the year as a *book of reference.*

We have put a lot of extra value into this month's magazine—special features in addition to our regular departments.

The covers are extra heavy, tough and strong, and are printed in four colors and gold. "Heart's Desire" is the subject illustrated on the front cover—a beautiful inspiring study for everyone interested in home building.

Sixteen pages in full colors, illustrating popular home designs, are included this month as usual. *Every month* the AMERICAN BUILDER presents this wonderful sixteen-page section of Home Designs in Colors. Our readers have come to expect this feature, and they are learning how to use these designs to the best advantage in interesting and selling prospective home builders. These beautiful home illustrations catch the eye and arouse the interest of everyone. They create home hunger and the longing to build and to improve.

The Portfolio of Notable Architecture this month is double the usual size; it is eight pages and illustrates a wide variety of noteworthy structures. Many of our architecturally inclined readers are keeping a special file of these plates illustrating notable examples of large and important buildings.

Authoritative reference articles covering every class of building are presented in this Annual Reference Number. Our readers will find them rich in human interest and authoritative information.

The Reference and Checking Lists

One of the most unusual features of this book, from a reference standpoint, is the Builders' Reference and Checking List, beginning on page 189. This is a specification guide for all classes of buildings and has been arranged in a logical way to be very useful. By checking over this list many important items will come to mind which otherwise might be forgotten. The lists covering building materials and building accessories are presented beginning on page 189, and then similar lists pertaining to contractors' equipment, woodworking machinery, concrete products plant equipment, and mechanics' tools, are presented in the distinctive India Tint Section beginning on page 291, where all of the announcements regarding equipment and tools are grouped together for the convenience of our readers.

Classified Index to Manufactured Goods

Paralleling those editorial lists we are also presenting a Classified Directory of all the products of our advertisers. This Classified Index and Buyers' Guide begins on page 460. It is arranged alphabetically by products, and under each heading are the names of the various manufacturers of that product. Following the name of each manufacturer is the page number of his advertisement in this issue, so that you can conveniently refer to that page and get additional information.

A great many manufacturers follow the custom of advertising only one or two items of their line, although they may have many items of value to the building industry. For this Classified Index and Buyers' Guide we have secured from each manufacturer his complete list of items of interest to our readers, and these are all included in this Classified Directory. This is a real service which we know our readers will appreciate.

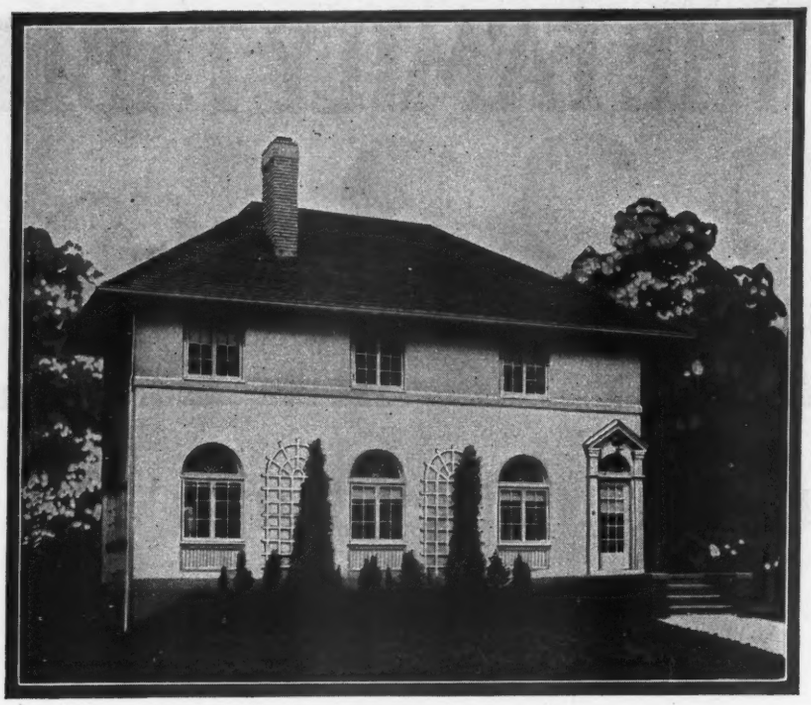
These various reference features will cause this June Annual Number to be carefully preserved and kept close at hand for ready reference all through the year until the Annual Number of 1926 is out *next* year.

On pages 499 and 501 you will find the Index to Advertisers, arranged alphabetically. Scan this list and observe the very high-grade, representative firms in the building industry who are numbered among AMERICAN BUILDER advertisers. We have here the largest and most complete list of building field advertisers ever before presented in a building publication. The completeness of this list makes the AMERICAN BUILDER your most valuable and convenient reference and buyers' guide for all classes of materials and equipment you need for handling any kind of building contract.

One of your biggest jobs as a builder is to specify and to buy to best advantage, to select that which is best and newest, most likely to add to the satisfaction and resale value of your building. Time spent in studying the advertisements in the AMERICAN BUILDER, especially in this June Annual Number, will be most profitably spent. These manufacturers invite your consideration. They are your friends and they want to do business with you. Write to them for their catalogs and samples. Get acquainted with them. We know that they are all responsible, reliable firms and they are creating new things every day which you ought to know about.

This AMERICAN BUILDER Annual Number for 1925 has a circulation of 85,000 copies. Keep these books working all through the year until our 1926 Annual is ready a year hence.

Editor AMERICAN BUILDER.

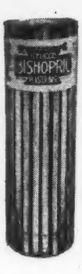


Residence Farrington Road, E. Cleveland, Ohio. Owners and builders: The Joseph Larong Co. Architect: Jos. L. Weinberg. Bishopric used on the Interior and Exterior.

THE DRUM

Bishopric Stucco is shipped in hermetically sealed metal drums. There is no waste or deterioration in storage and you are assured of absolutely fresh new material. The Roll and the Drum meet with the endorsement of architects, builders and satisfied home-owners throughout the world.

THE ROLL



Bishopric Base comes to the building operation in large rolls containing 100 square feet. It is easily handled, quickly cut to desired size without waste—Bishopric Base saves 25% in plaster or stucco material and increases the strength of the building.

This Wall Meets Every Test

Ease of Application, Speed of Construction Beauty, Economy, Permanency

Builders, Architects and Contractors everywhere recommend Bishopric Stucco over Bishopric Base because they know they are getting full value for their money in every respect. They are buying not only reliable, trade-marked materials, but every roll of Bishopric Base and every drum of Bishopric Stucco delivered on the job means **economy** because they are so easily and quickly handled.

Bishopric Base saves mortar and is applied to the wall quicker than other materials **without waste.** Bishopric Stucco is so easy and smooth under the trowel that more and better work is done in far less time.

The beauty of Bishopric Stucco in color and texture means increased business for the builder because every job sells another.

Just one word more: Bishopric is built to endure and that is just the best reason why each time you use Bishopric you get a new and better reputation for good building.

Let Us Send You the Story of Bishopric

"Bishopric For All Time and Clime" beautifully illustrated comes to you for the asking. It opens to the builder an avenue to the ideal structure—ideal in beauty, permanency and living comfort. Send for it today.

Bishopric is sold by Dealers Everywhere

The BISHOPRIC MANUFACTURING Co.
5 ESTE AVE. CINCINNATI, OHIO.
NEW YORK CITY CINCINNATI OTTAWA, CANADA
The BISHOPRIC MFG. CO. OF CALIFORNIA
LOS ANGELES

See how it Locks the Stucco

Bishopric Base is first nailed securely to the studding of the building—a Bishopric nail to every wood strip at every bearing point.

Bishopric Stucco is first dry-mixed. Then nothing is added but clear water. Bishopric Stucco works up to a uniform mortar and is easily laid on because it works so smoothly. Plasterers everywhere enjoy putting on Bishopric Stucco because of its unexcelled smoothness and uniformity.

The mortar goes over and in between the wood strips and locks into an inverted wedge clasp.

Note how the wood strips of Bishopric Base are embedded in a tough layer of asphalt mastic on a wood fibre background. This forms an asphalt curtain which effectively shuts out moisture, heat, cold and vermin.

BISHOPRIC STUCCO over BISHOPRIC BASE

"A Complete Wall Unit for all Time and Clime"

AMERICAN BUILDER

Formerly AMERICAN CARPENTER AND BUILDER

International Building Congress

THE United States will be represented at the fourth international congress of building industry and public works by nine delegates who have been appointed by President Coolidge and who represent different sections of the country. The congress will meet June 21, in Paris, France, at the invitation of the French Government.

✣

Rapid Zoning Progress

ACCORDING to the U. S. Department of Commerce, a total of 320 municipalities throughout the country, with a population of more than 24,000,000, had zoning ordinances in effect on January 1, 1925. These municipalities range in size from the city of New York down to the smallest villages. Of the combined population of all cities of over 25,000 population, 62 per cent are receiving the benefits of zoning.

While the extent of regulation varies considerably in general, these zoning ordinances seek to regulate the use to which buildings may be put, the area of the lot which they may cover and their height in different sections of the city in order that the land in each district may be used for the purpose for which it is best suited. Home owners are protected from the invasion of their neighborhood by factories and, on the other hand, factory owners have a better choice of desireable plant sites.

✣

Class in Gardening and Landscaping

A CLASS in flower culture and landscaping open to the public is being conducted by the Tulsa, Okla., Real Estate Board. The course, aimed to give house owners and flower lovers of the city the information needed for landscaping improvement, is an extension of the regular technical real estate educational work carried on by the board. The class is conducted as part of the work of the Night High School. It was opened following public requests for such a course.

The Denver Real Estate Board plans to award prizes for the most beautiful premises and also for the best kept yards cared for by tenant renters, as part of its campaign to "Keep Denver Beautiful." A floricultural committee has been appointed to provide for the planting of trees, shrubs and flowers.

Real Estate Boards of Omaha, Neb.; San Antonio, Texas; Minneapolis, Minn., and Fort Smith, Ark., have taken a lead in developing back-yard beauty through similar contests.

Steel Standardization

THE story of the construction economies that are being effected through standardization and simplification in the structural steel industry has just been told to audiences of engineers, architects, structural steel fabricators, contractors and business men, in 10 cities of the South, West and Western Canada by Lee H. Miller, chief engineer of the American Institute of Steel Construction.

These speeches sounded the note of construction economy through standardization in the structural steel industry by explaining the significance of the work being done by the American Institute of Steel Construction. He traced the history of the steel industry from its earliest beginnings and described the confusion that crept into the industry through utter lack of standardization of specifications and practices.

Since the institute came forward with the Standard Specification and the Code of Standard Practice, more than 30 leading cities of the United States have written the provisions of the Standard Specification into their building codes, and that a like number are now considering its adoption.

Specification of the new unit stress for structural steel makes possible a saving of fully 12 per cent in the amount of steel required for any specific job. This one phase of the economies made possible through the specification and the Code of Standard Practice will result in an economy of $30,000,000 annually in this country as soon as the new unit stress is generally adopted.

The Porch Connects Home and Garden. When planning any home take thought in ample time as to the outlook from the several important rooms and arrange the garden side so that the garden terrace can be entered directly and easily from the house.

Two Autocar books that cover the whole field of truck transportation

The Merchandise Hauling Book

A 104-page book containing—

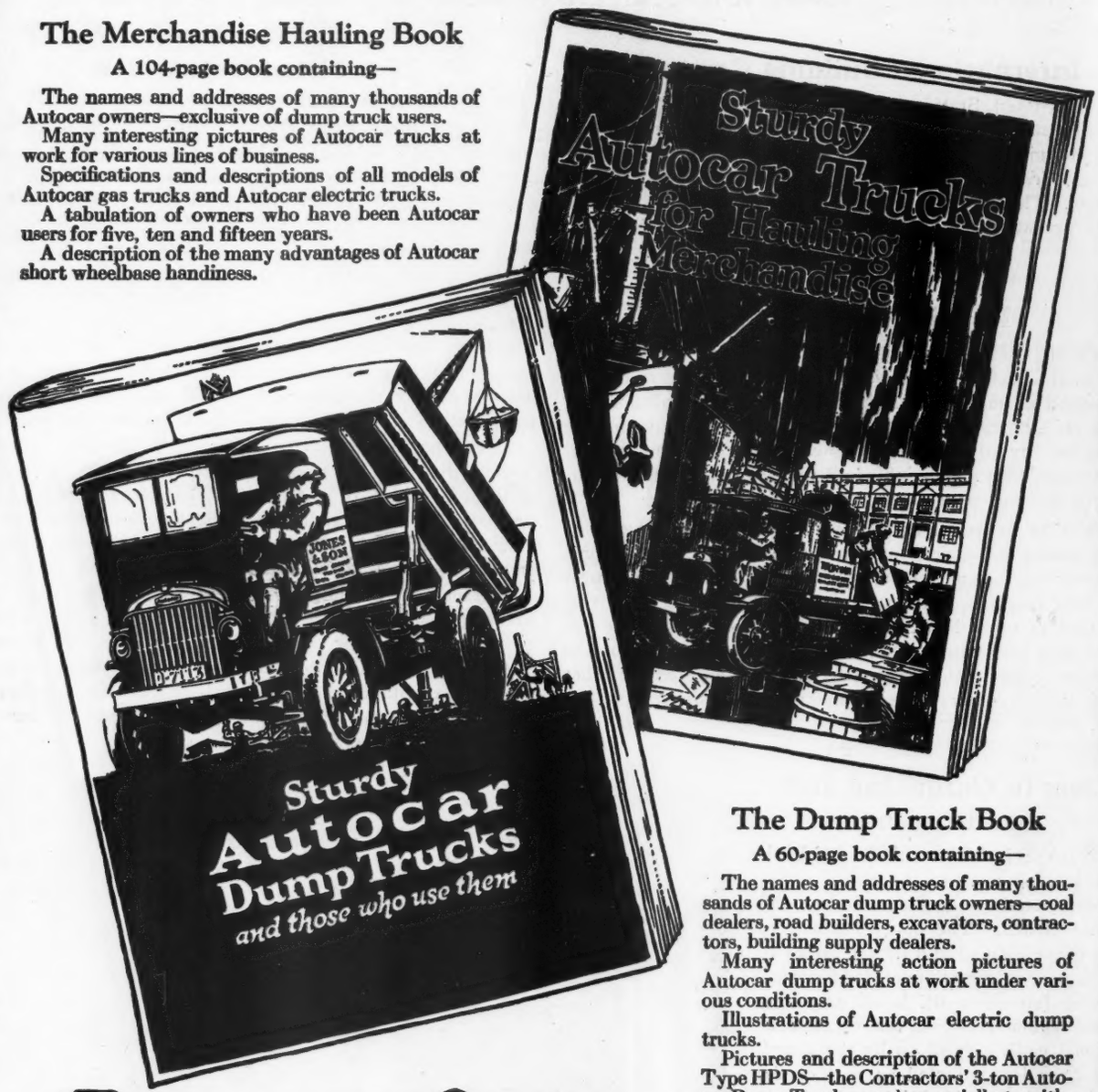
The names and addresses of many thousands of Autocar owners—exclusive of dump truck users.

Many interesting pictures of Autocar trucks at work for various lines of business.

Specifications and descriptions of all models of Autocar gas trucks and Autocar electric trucks.

A tabulation of owners who have been Autocar users for five, ten and fifteen years.

A description of the many advantages of Autocar short wheelbase handiness.



The Dump Truck Book

A 60-page book containing—

The names and addresses of many thousands of Autocar dump truck owners—coal dealers, road builders, excavators, contractors, building supply dealers.

Many interesting action pictures of Autocar dump trucks at work under various conditions.

Illustrations of Autocar electric dump trucks.

Pictures and description of the Autocar Type HPDS—the Contractors' 3-ton Autocar Dump Truck—made especially to withstand the hard grind of contracting work.

Every user of motor trucks will be interested in these books. A post card will bring you the one you want.

The Autocar Company
ESTABLISHED 1897
Ardmore, Pa.
Branches in 49 cities

Autocar
gas *and* electric trucks
EITHER OR BOTH - AS YOUR WORK REQUIRES

America — the Land of Comfortable Homes

Every Year, Homes Are Becoming More Efficient, More Comfortable and Attractive

IT is fortunate for the building industry that there are so many opinions as to choice in both design and material. We know a gentleman who insisted upon a brick house of Georgian design, but his wife wanted a white wood frame Colonial, so they compromised by getting the white wood frame Colonial. Usually, however, the husband cunningly contrives to keep his wife interested inside while he appraises the basement and the outside of a house which he contemplates buying. But the outside of a house is a difficult thing to conceal and nowadays the women are certainly looking for appearances. It may be due to them that color and texture have become so prominent in building materials even though the architects claim credit for it.

The Modern Sun Room Is a Pleasing Place in Summer or Winter. Note the large size radiator at the end of this sun porch.

Instead of the sombre effects of former days, roofs have blossomed out in a bewildering variety of tints. Stained wood shingles are exceedingly popular for both roofing and siding. Asphalt shingles are available in colors; and blended colors in natural slate, clay tile and rigid asbestos are growing in popularity. And now we have the thatched shingle effect in several varieties of roof coverings in imitation of the ancient thatched roofs.

Brick has joined the ranks of the esthetic; it can be had in innumerable warm tints and textures. Common brick has found its texture effect in the method of its laying, called "skintled" brick and with colored mortar joints producing some surprisingly good effects.

Dutch Colonial designs have been enjoying an unusual vogue—perhaps because this style lends itself to small, as well as large, house designs and economizes on lumber by eliminating the attic. Strange to say, while smaller houses are in demand, very small rooms have been eliminated in all but diminutive bungalows and cottages. The seven-room house of today usually has a living room of generous proportions, with a sun room adjacent, adding to the impression of size and vista. While Colonial architecture is still

A Very Attractive Dutch Colonial Design with Living Porch at the End. Note the doorway leading to porch deck with electric light along side.

our main inspiration, there are evidences of a swing in public taste towards designs of the English type.

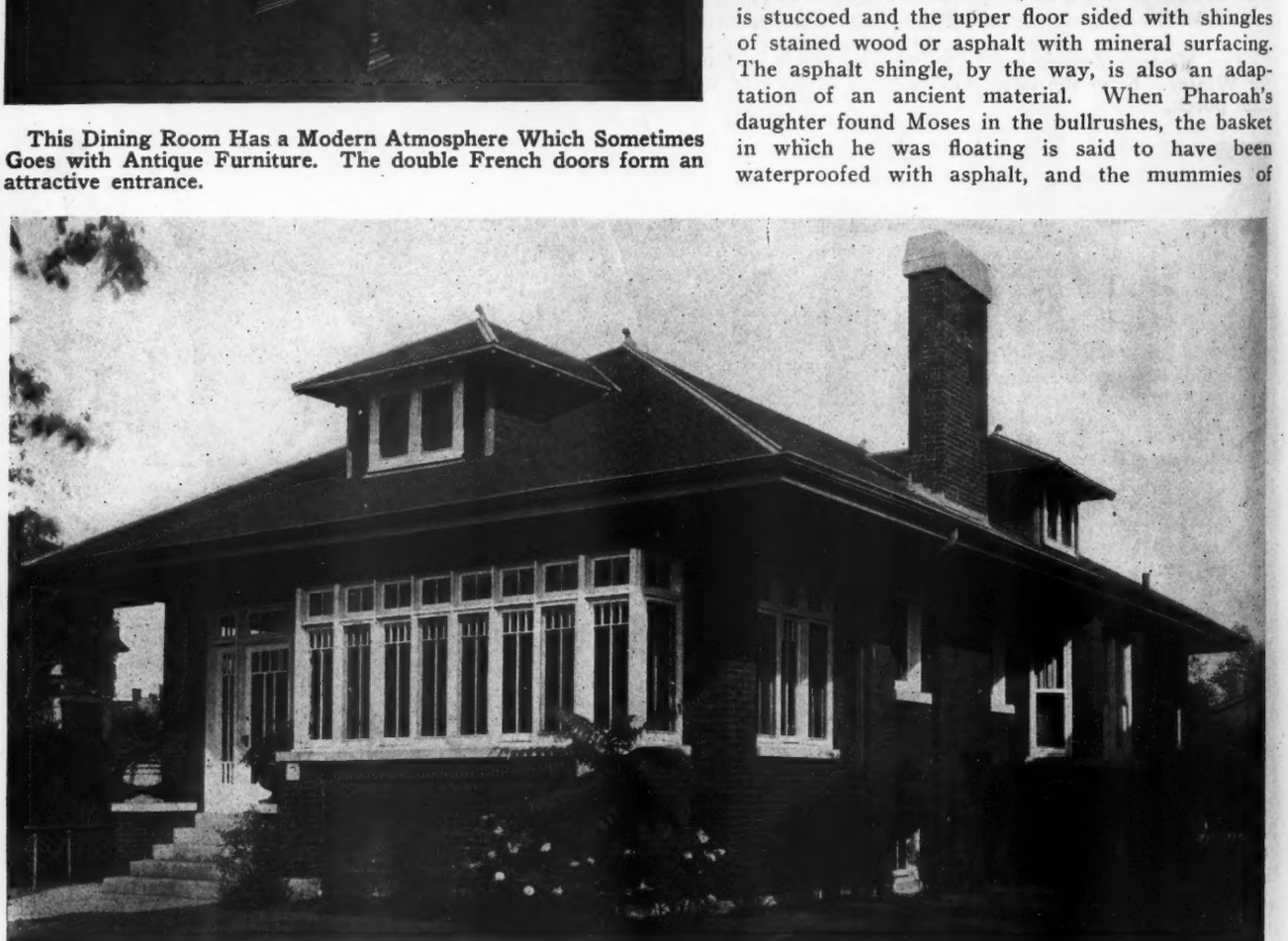
Those who have found recollections of pleasant summer nights on verandas—mixed, perhaps, with romantic recollections—will regret the passing of the veranda. The sun room has taken its place—a room for winter, as well as summer use—the sash well weatherstripped in winter and equipped with screens in summer. Lighted, heated and furnished, it is a bright, cheery spot in winter and easily thrown open to the cooling breezes when summer comes around. Even the family hearth, in some houses, has been moved to the sun room.

In modern designs, dining rooms are quite frequently placed at the front of the house sharing with the living room, in equal degree, the honors of entertainment. An entirely new room is appearing on many house plans—the radio room—usually installed as an alcove to living room, dining room or study. The most favored location is off the living room. Thus, to the other attractions of the modern home, an unlimited range of music and entertainment via the radio is "on tap" day or night.

This Very Complete Sun Porch Has a Fireplace for Fall and Winter Use and Is Comfortably Furnished with Porch Swing, Easy Chairs, Floor Lamps, Etc.

This Dining Room Has a Modern Atmosphere Which Sometimes Goes with Antique Furniture. The double French doors form an attractive entrance.

Both materials and designs have been modernized. Wood, brick, stone and stucco are even more generally used now than in the days of Caesar. While not in itself new, stucco today presents a wide range of new effects in color, texture, pebble-dash or sparkling minerals. It is often used in combination with other materials, as when the lower floor is stuccoed and the upper floor sided with shingles of stained wood or asphalt with mineral surfacing. The asphalt shingle, by the way, is also an adaptation of an ancient material. When Pharoah's daughter found Moses in the bullrushes, the basket in which he was floating is said to have been waterproofed with asphalt, and the mummies of



Brick Bungalow of the City Type Usually on Lots with Just Enough Room for Grass, Shrubbery and Flowers. The millwork is noticeable and attractive, especially the group of small windows across the front.

This Bedroom Is of a Size Associated with a Large House. Note the low radiator under the window with cover which forms a window seat. Also the full length mirror in the closet door. Portraits of children at various ages adorn the walls.

Egyptian kings lie in our museums today swathed in asphalt and linen.

Machine molded concrete masonry products have been brought to a high state of perfection in recent years even though poured concrete dates back to the days of the old Roman aqueduct.

A new type of concrete masonry house is making its appearance. This new type of concrete masonry is finer and of better color than was possible with the old methods. It is beautifully molded, dense and harder than many natural stones. By tooling or the use of special aggregates, the effect of almost any natural stone can be obtained.

There have been changes and improvements in sash, doors and millwork. Casement windows are becoming as popular today—with modern fixtures, however—as they were when Spanish guitars thrummed under them in old Madrid.

Insulation in the walls of a house will certainly make it cooler in summer and warmer in winter,

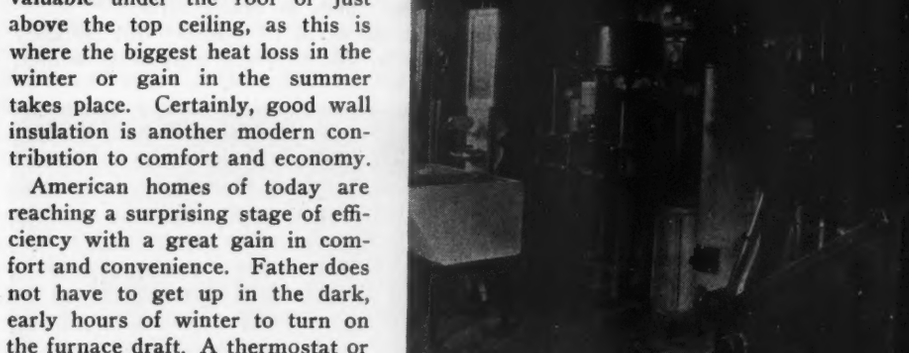
A Very Complete Modern Bathroom. Note the recess for soap holder and for bath brush. Also the weigh scale, the fine pedestal lavatory and the medicine cabinet which scarcely shows in the picture.

A Fine Type of Concrete Masonry House, with Garage and Sleeping Porch in a Rear Wing. Note the casement windows and fine ornamental effects of the plaisance with concrete flower urns. The portico is not quite complete.

with a corresponding saving on the coal pile. The value of insulation is well illustrated in the case of the thermos bottle which will keep coffee hot for a day. House insulation is particularly valuable under the roof or just above the top ceiling, as this is where the biggest heat loss in the winter or gain in the summer takes place. Certainly, good wall insulation is another modern contribution to comfort and economy.

American homes of today are reaching a surprising stage of efficiency with a great gain in comfort and convenience. Father does not have to get up in the dark, early hours of winter to turn on the furnace draft. A thermostat or automatic heat regulator does that for him and the house is comfortably warm when members of the family rise. Maybe, too, the family has been able to afford an oil-burner or a gas-fired furnace or boiler, with their clean, automatic heat. In fact, the basement of the modern home is so clean and dry that a billiard or playroom can be located there. It is a fine place for Jimmy and the boys to play on rainy days instead of staying upstairs and teasing the cat or pulling sister's hair. Steel basement sash will admit plenty of daylight. It will be perfectly safe to store the family heirlooms in any well built modern basement where proper waterproofing materials and methods have been used. Even if flood water backs up through the drain, an automatic cellar draining pump, on guard for that purpose, will eject it.

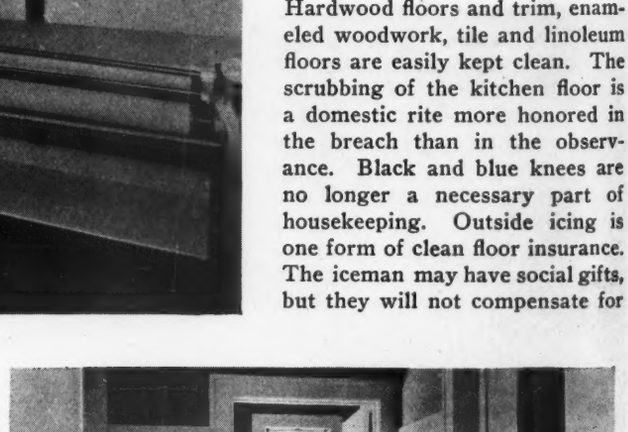
The feminine portion of the household are thoroughly sold on the conveniences of the modern home—and they are the big sales factor as any real estate agent will tell you.



This Picture Shows the Basement of a Bungalow Equipped with a Hot Water Heating Boiler of Triangular Shape Fired by a Motor Driven Oil Burner. This view also shows the water softening apparatus, the laundry tubs and the insulated domestic water heater and storage, gas fired and automatically controlled.

Hardwood floors and trim, enameled woodwork, tile and linoleum floors are easily kept clean. The scrubbing of the kitchen floor is a domestic rite more honored in the breach than in the observance. Black and blue knees are no longer a necessary part of housekeeping. Outside icing is one form of clean floor insurance. The iceman may have social gifts, but they will not compensate for

This Well Lighted Basement Has a Very Completely Equipped Laundry. Here are shown the electric ironing machine as well as the ironing board for a hand electric iron. The laundry gas stove is shown, also the gas-fired clothes dryer.



The Built-In Ironing Board, Installed as Per Illustration, Is Exceedingly Popular with Most Feminine Home Buyers.

what he brings in on his feet. Nor does it seem to hurt his feelings to provide an outer icing door where he may more quickly deposit his dripping burden. Or, better still, there is the mechanical refrigerator which eliminates the iceman and his bill altogether. There are several types of both the electric and gas fired variety in successful domestic use. The mechanical unit is usually installed in the basement and is automatic in its action; but the refrigerator itself can be placed in kitchen or pantry.

A convenient soiled linen chute will, of course, extend from bedroom floor to basement, going on its modern way to the laundry tubs and the washing machine. The washboard market has suffered a serious decline. Red knuckles among laundresses are no longer in style; in fact, the lady usually arrives in an automobile and is herself a sort of chauffeur of the suds. A gas fired clothes dryer makes the laundry complete and up-to-date.

That boon to every housekeeper—soft water—can be made available in bath, laundry and kitchen with the automatic water softener in the basement. Another boon to the housekeeper and the rest of the household, as well, is the automatic domestic water heater which will turn on the gas whenever the temperature of the water falls below a predetermined point. It is thoroughly insulated for economical hot water storage. A yearning to wash dishes will not be disappointed because someone has taken a bath upstairs. In fact, the ultra-modern house has a mechanical dishwasher. Some are electric, some hydraulic, and, perhaps the latest, is a combination sink and dishwasher. The picture of a housewife elegantly attired, busy at her tasks of housekeeping while sitting in a Morris chair, reading a novel and pushing electric buttons may yet come true.

Woe betide the builder today if he fails to provide convenience outlets in every room. What good is a vacuum sweeper if one has to get down on one's knees and disconnect a floor lamp before being able to plug in with the sweeper connection? Wise builders are providing against this emergency.

Insulating the Walls of a House Stops the Heat and Makes It Warmer in Winter and Cooler in Summer.

The kitchen of the modern house is getting to be a filing cabinet. There is a place for everything and everything should be in that place—a wall cabinet for the ironing board which lets down right under the electric iron connection; a kitchen cabinet—preferably built in—with sugar and spices and cooking devices. Other cabinets for pots and pans flank the cooking range and the sink; the latter placed under a window, which does considerable to lift the shadow for housekeeping.

From a place to be avoided until Saturday night, the bathroom has become the showplace of American homes—glistening in white tile, enamel and porcelain and decorated with nickel or silver plated trimmings. The tub has become a sunken pool into which one can step without vaulting or climbing. If there is not a separate shower cabinet, there is usually one arranged over the tub with rubber curtains. You can take your choice between this and the one which has mirrors flanked all around it. The latter would only be a luxury for some people. A pedestal lavatory is the latest; we don't understand how anyone ever got into Burke's Peerage without it. Even the banker when he is appraising your house for a loan frowns upon any other type of lavatory.

Nor has the lowly toilet seat been neglected; it is as spick and span as any of the other equipment. Both the forests and the seas have been scoured for improved material. The bowl no longer finds its support and connection through the floor, but through the wall behind. Flush tanks are disappearing before the rush of the direct flush-valves.

Architects and builders all know that it pays to install good builders' hardware. They are constantly preaching this gospel to home buyers and owners of other classes of buildings. It costs less in the end and gives real satisfaction. It is encouraging to note that there is an increasing demand for the better grade of door knobs, escutcheons, locks, latches and hinges.

More attention is being paid than ever before to wall finish and decoration. Tinted sand float finish or painted rough finish is quite the vogue. Wall papers are still popular, especially for bedrooms, and a woven, waterproof fabric for wall finish has been perfected which provides handsome and durable effects. It can be washed without injury and provides a soft, pleasing finish without gloss, in many tints and patterns.

Walnut, birch and gum, as well as oak and mahogany, are being used for finish and paneling. Veneered panels are furnished in many varieties of woods and so made as to prevent cracking, shrinking or warping.

The fireplace is, perhaps, more popular than ever before. It is a genuine contribution to comfort, with modern design and equipment which prevent drafts and smoke. Gas logs and radiant electric effects are installed where owners do not want to build fires. However, the wood and coal grates give genuine comforts, especially to take off the chill of early fall or late spring.

There must be some other explanation than "housing shortage" for the continuing nation-wide demand for new homes. People today are building for perfectly natural reasons—because they *want to build.* More of them want homes than ever before and those who want homes want *better homes.*

With regard to continued home building activity all over the land, perhaps no other explanation is needed than that homes have been made more attractive. The building industry has sold the American people—with the aid of extensive publicity—on the increased attractiveness of the modern home.

✣

Defining Rail Steel Bars

RAIL steel reinforcing bars for concrete are manufactured from rails removed from the track on account of wear after years of service. This rail steel is a product that originally had to meet the strictest specificaions before use and during service in the track.

The upper end of the ingot is discarded to remove impurities before the remainder is rolled into rails. These rails have to withstand the blows of heavy locomotives during the heat of summer and the frost of winter on a yielding or a frozen ballast. After their service in the track they are disposed of to the rail steel industry to be reheated and rolled into various products such as small sections, bars and tubing.

This is the product commonly specified by architects and engineers as specification A-16-14, which is the standard specification of the American Society for Testing Materials.

A Truly Delightful Interior—Home of C. W. Ditchy, Architect, Northwood, Mich.; Glenn E. Routier, Builder.

Fifty-Story Tower Planned for Cleveland's New Terminal

Eight Fine Architectural Perspectives of Notable Buildings in This Month's Art Supplement

By BERNARD L. JOHNSON
Editor, American Builder

OUR readers will find among this month's plates some particularly fine perspectives and a number of building projects of national interest. It will be noticed also that this month's Art Supplement has been increased in size. Architects all over the country are particularly busy just now, but we hope that some will find time to write us commenting on these perspective plates and making suggestions for future issues. We like to keep in touch with the work of our readers and what they have on their boards.

New Cleveland Union Station

Graham, Anderson, Probst and White, Architects

A tower rising to a height of fifty stories, 708 feet above the concourse level, will be the central feature of the New Union Station at Cleveland. It will rest on caisson foundations extending down to bed rock.

The tower will soar from out of the mass of an imposing group of classic buildings fronting on the Public Square, with its cloud-capped summit forming a new skyline visible from practically any part of Cleveland. The Hotel Cleveland forms the right wing of the construction. Another building, harmonizing with the hotel in design and construction, will form the left wing.

The terminal grouping commands a diagonal sweep of the Square. The entire Square, therefore, serves as a foreground. This accentuates the symmetrical and balanced effect of the grouping.

The impression of the tower and of the grouping as a whole is one of sturdiness and strength, and of restraint, with respect to decorative treatment. Its beauty is in its simplicity rather than a striving after the elaborate. Height has not been sought after for height's sake, but because of the part it plays in fitting the construction to the Public Square surroundings.

Graham, Anderson, Probst and White, architects, of Chicago, designed the buildings, the construction of which will be supervised by H. D. Jouett, chief engineer of the Terminals Company.

The Tower Building, or central building of the Public Square group, will extend south as far as the new Prospect Avenue. It will be served by twenty elevators. On the Prospect Avenue side, the main building will be fifteen stories high, with a central court running back to the southerly face of the tower proper.

The main entrance to the Union Station at the Public Square forms an arcaded loggia in front of the base of the tower. This loggia will be 65 feet high, consisting of seven great arches, 18 feet wide and 37 feet high. These arches will be embellished by free-standing columns and entablature.

The Cleveland Union Station terminal will extend from East Fortieth Street to West Thirty-seventh Street. It will be electrified and the electrification will be extended for some distance on the participating railroads, to points where it will be convenient to change from steam locomotives to electric locomotives, and vice versa, as is done in New York.

The three railroads, which handle more than half of the passenger business of the city of Cleveland, have formally contracted to use the new station. These are the New York Central, the Big Four and the Nickel Plate. The other railroads of Cleveland may do so whenever they wish.

The station development involves a number of engineering prodigies. The Terminal Company will place about 400,000 yards of concrete; 15,000 tons of reinforcing rods; 50,000 tons of steel; 42 miles of tracks and 450,000 square feet of platforms. It will construct, it is estimated, 760 lineal feet of street bridges over tracks, 4,425 lineal feet of street viaducts over the station, 4,400 lineal feet of railroad bridges and viaducts.

High School, Patchogue, L. I., New York

Tooker and Marsh, Architects

The new high school building at Patchogue, Long Island, has been designed to meet all the needs of the community for secondary education and for community use. The building was planned in 1922, and the contract for it was let in November of that year. It was completed in February, 1924, and occupied shortly thereafter.

The instructional departments of the building are in the middle portion and in the rear wing, and the auditorium and gymnasium are in the two end rooms. The arrangement is such that the auditorium adjoins the village Memorial Park and may serve for various meetings and gatherings, independent of the school and of the balance of the building. The auditorium has a front entrance leading directly from the street, with a large lobby and stair hall equipped with a ticket booth, coat checking room, and lavatories. The auditorium seats about 1,200, and has a large stage suitable for meetings and theatricals. There are ample dressing rooms and an orchestral pit. A projection booth is provided in the gallery.

The gymnasium at the south end of the building is a complete unit which can also be handled independently of the balance of the building. It has a front entrance with a lobby and ticket office, space for checking wardrobes, and an office for the director. Locker rooms and considerable space for spectators, toilets and showers have been arranged for. The gym locker rooms are independent of the students' locker and shower rooms, which are located in the main portion of the building.

Except for pipe tunnels there is no basement under any portion of the building. The ground floor, which contains a lunch room, locker rooms, work shops, and classrooms, is on the level of the building site. On this floor there is, in addition to the rooms enumerated, space for the physical directors and for the medical inspectors.

On the first floor are located six classrooms, a group of three rooms for the commercial department, a large study hall which may be divided into two classrooms, toilets, and the administrative offices of the village school system.

On the second floor there are twelve classrooms, a double study hall which may also be cut into two classrooms, a teachers' room, toilets, and locker rooms. The third floor is devoted to the laboratories, drafting room, and a housekeeping suite.

The building is of brick, concrete, and stone, and cost a total of $464,500 with equipment.

The Book-Cadillac Hotel, Detroit, Mich.

Louis Kamper, Architect

Of the many fine hotels, now planned, under construction or recently completed, the Book-Cadillac, of Detroit, is one of the most palatial. It is located on the site of former Cadillac Hotels, at Michigan Avenue, Washington Boulevard and Shelby Street. The new hotel has 1,200 guest rooms, each with bath, and the structure cost $14,000,000 to build and $2,000,000 more to equip. As shown by Mr. Kamper's perspective drawing, the architecture is of modified Italian Renaissance, with exterior walls of best quality face brick, Bedford limestone and terra cotta. The steel framing rests on caissons carried down to hard pan, 120 feet below grade, and extending to a height of about 300 feet above street level. Practically all the interior columns of the wings are supported on trusses, in order to provide the large, clear areas of the ball rooms on the floor above the lobby and its mezzanine.

An interesting feature of the exterior design of the building is to be seen in four stone statues on the Michigan Avenue front, representing charcaters intimately connected with the early history of Detroit. These consist of General Anthony Wayne, hero of the British and Indian war; Antoine De La Mothe Cadillac, founder of the city of Detroit; Pontiac, Indian chief, leader of the famous Pontiac conspiracy, and Navarre, French nobleman and Cadillac's lieutenant.

Upon entering the hotel one proceeds up a beautiful stairway built of Breche Violette marble imported from France and trimmed with yellow Sienna marble from Italy with red rope guard rails on each side. The stairway, which is covered with soft gray green carpet, leads up to the main lobby lounge floor which occupies a considerable part of the second story. It is composed of a medium sized entrance foyer surrounding the stairway well and a long lobby and lounge running two-thirds of the full length of the hotel along the Michigan Avenue side. This lobby lounge gave even the professional men attending the opening something to think about. They were pronounced in their expressions of admiration.

On this floor, beside the lobby lounge, are located the offices, main restaurant, cafe, tearoom, and kitchen. The lobby is a Venetian room and the walls are of beautiful colored Breche Violette marble trimmed with white Alabama. The gallery railings of wrought bronze rest upon black walnut beams between columns supporting a richly modeled cornice. The ceiling is of intricate panels with the whole surface decorated in subdued colors on a ground work of gold leaf. Appropriately enough, the ceiling is emblazoned with the coat of arms of Cadillac, the brilliant and dashing founder of the city.

Other unique and beautiful features of decorations, furnishings and equipment are found in the Main Restaurant, Palm Room, Chinois Tea Room, Francis I Cafe, English Grille, Women's Retiring Rooms, Grand Ball Room, Crystal Ball Room and Italian Garden.

The Book-Cadillac represents many new ideas in layout, decoration, kitchen and mechanical equipment. Many new efficiency ideas and adaptations of the latest in equipment and furnishings have been made.

An interesting fact in connection with this hotel enterprise is that the Book Brothers, J. B. Book, Jr., F. P. and Herbert V. Book, were born in the old Cadillac Hotel and are now proprietors of this magnificent new hostelry.

Jewish Maternity Hospital, New York City

Arnold W. Brunner Associates, Architects

Architectural features of this new hospital building will be the strong vertical lines from the second to the seventh stories and the arcade arrangement of the window arches in the top floor set-back. The building is to be erected at 105th Street and Fifth Avenue.

The design is by the late Arnold F. Brunner and will be carried to completion by the other members of the firm who have incorporated under name, Arnold W. Brunner Associates. This hospital has been designed and will be equipped in accordance with the latest maternity hospital efficiency ideas.

Jackson Towers Apartments, Chicago

Walter W. Ahlschlager, Inc., Architects

That there is a ready sale for co-operative apartments of the de luxe type is well illustrated by the plans for this nineteen-story co-operative building, to face Jackson Park. It has been bonded by the American Bond and Mortgage Company for $1,600,000, maturing in from two to ten years.

The building will be nineteen stories in height, of fireproof construction and pressed brick with terra cotta trim. It will be "L" shaped, occupying the back portion of the lot, permitting the maximum of light, view and air. The entrance will be from a large porte cochere into a main lobby, 13 by 30 feet. Corridors will lead from the lobby to three reception rooms.

There will be a total of seventy-two apartments, ranging in size from eight rooms and four baths to five roms and two baths. The apartments facing south on Jackson Park will be duplex, the living room, library, dining room, kitchen, pantry, maid's room and bath being on the lower floor. The sleeping quarters on the second floor will be reached by a highly ornamental wrought iron staircase. There will be in the corner of each living room a large ornamental cast stone fireplace, for the burning of logs. Floors will be of hardwood with painted canvased walls and enameled woodwork.

California State Building, Sacramento, Cal.

Weeks and Day, Architects and Engineers, and George B. McDougall, State Architect

This splendid building represents the best in classic design. Columns and capitals, with a particularly fine entablature, pediment and tympanum, are reminiscent of the ancient Greek temples. The building is to house state offices and courts, as well as the state library.

The Jackson Building, Asheville, N. C.

Donald Greene, Architect

Eighteen months were required to build the Jackson Building. It is of steel frame, fireproof construction. There are composition floors and steel windows. The cornices are decorated with gargoyles, reminding one of the Cathedral of Notre Dame, in Paris.

The building is 200 feet in height above grade with tower and has three basement floors. It has fourteen renting floors above ground, with 200 office rooms. There is an eighteen million candle power searchlight on the roof, as well as one of slightly smaller size. These attract visitors who want to scan the country around. The Jackson Building is the tallest in Asheville.

Tampa Board of Trade, Tampa, Florida

M. Lee Elliot, Architect

This structure will be one of the most beautiful and unique examples of architecture of its kind. It will front 120 feet on Lafayette Street and extend back along the river for a distance of 60 feet. An individual feature will be boat houses built where the building will extend over the water. The first floor will be built on a level with the bridge and street but a story above the level of the park. The space below the first floor will be used for commodious rest rooms for the public. The first two floors, which compose the main body of the building, will be 120 by 45 feet and in them will be located reception and entertainment rooms for visitors and the executive offices of the Board of Trade. The main body of the tower will measure 45 by 45 feet and will be thirteen stories in height.

ART SUPPLEMENT *of* NOTABLE ARCHITECTURE

PLATE XXXIII

The CLEVELAND UNION STATION, on the Public Square, Cleveland, O., Graham, Anderson, Probst & White, of Chicago, Architects.

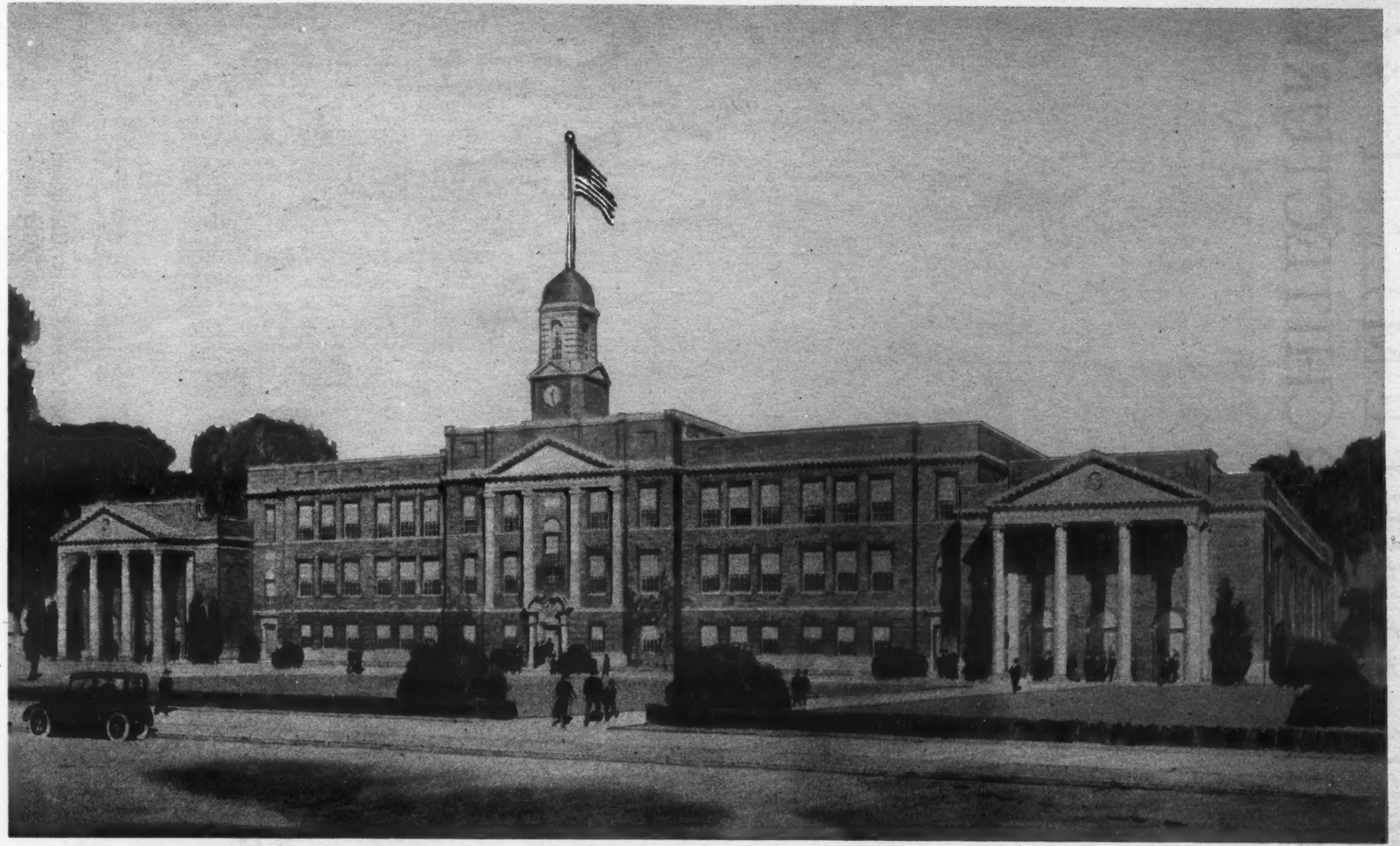


PLATE XXXIV

The Patchogue High School, Patchogue, Long Island, N. Y.;
Tooker & Marsh, of New York, Architects.

PLATE XXXV

The Book-Cadillac Hotel, Detroit, Mich.; Lewis Kamper, of Detroit, Architect.
Acknowledged as being the last word in modern hotel
design and equipment.

PLATE XXXVI

The Jewish Maternity Hospital, New York City;
Arnold W. Brunner, of New York, Architect.

PLATE XXXVII

The Jackson Towers, Co-operative Apartment Hotel, Fifty-sixth St. and Everett Ave., Chicago; Walter W. Ahlschlager Inc., of Chicago, Architects.

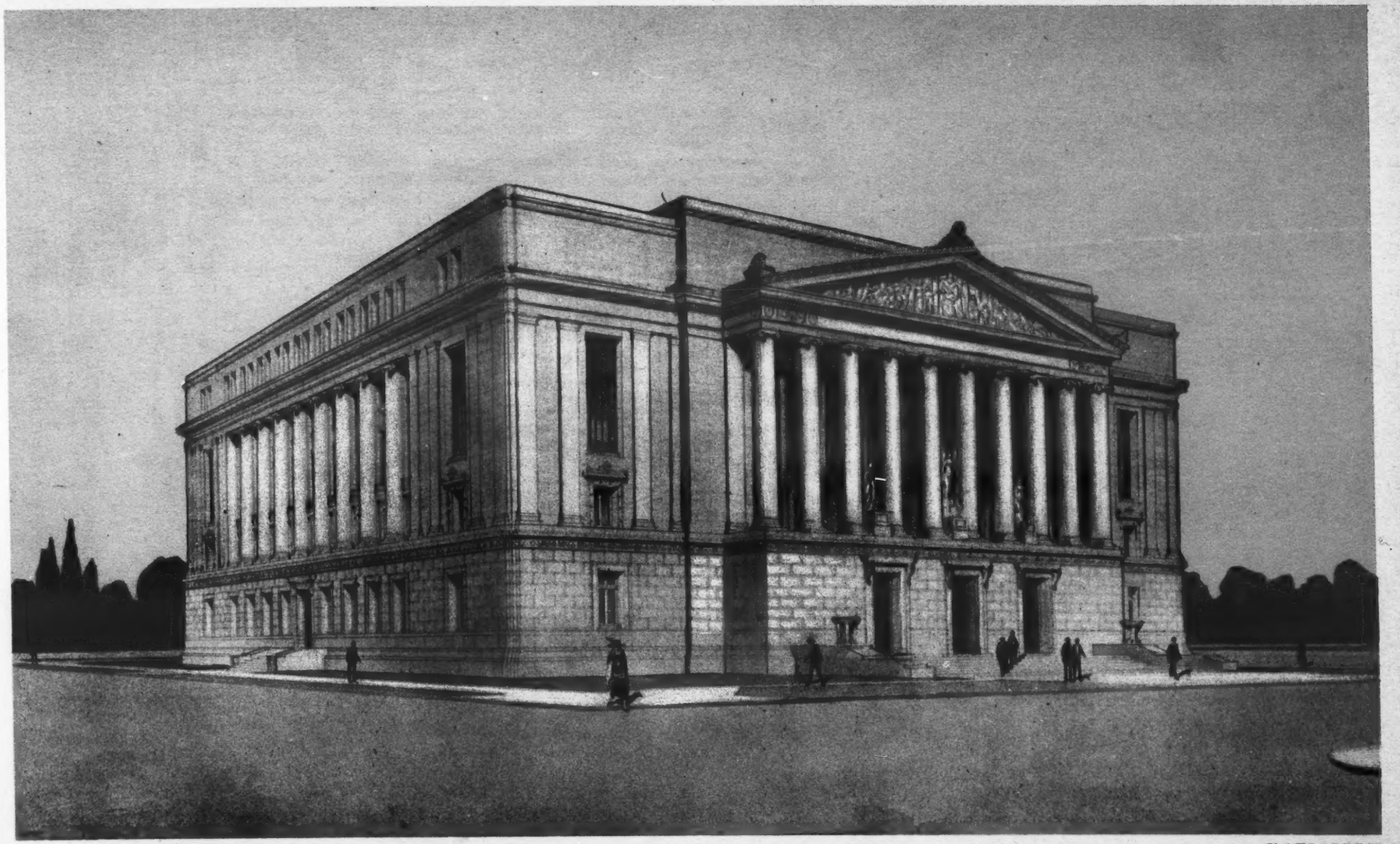


PLATE XXXVIII

The California State Office Building, Library and Court House, Sacramento, Calif.; Weeks & Day, of San Francisco, Architecture and Engineering, Geo. B. McDougall, State Architect.

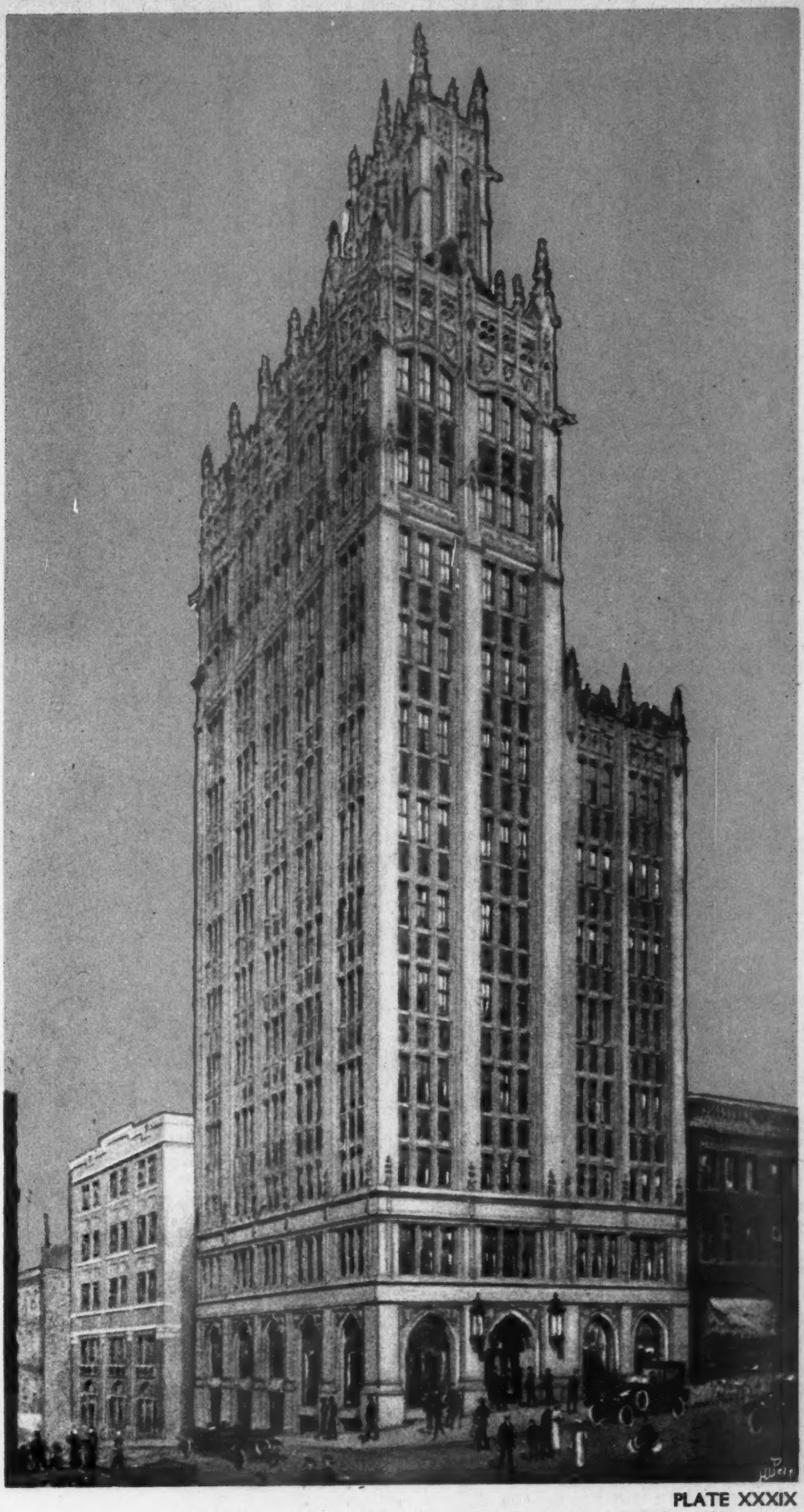


PLATE XXXIX

The JACKSON BUILDING, Asheville, N. C.; Donald Greene, of Asheville, Architect.
A superb Gothic structure 200 feet high.

PLATE XXXX

The TAMPA BOARD OF TRADE BUILDING, Tampa, Fla.; M. Leo Elliot, of Tampa, Architect. Foundation stories are to be 120 by 45 feet, the tower stories 45 by 45 feet.

From Our Daily FOREIGN MAIL

Conducted by Wm A. Radford, Jr.

William A. Radford, Jr., Vice-President of the Radford Publications, in a two-year investigation, has personally visited forty-nine foreign countries in the interest of the American Builder and World Trade for our advertisers.

THE immensity of our markets here at home and the attractiveness of our purely domestic trade should not prevent American manufacturers from reaching out now to cultivate and to secure foreign business. Export trade is growing. Our American exports for March totaled $453,434,000.00, an increase of 33 per cent over March, 1924.

Conditions in general are more and more favorable to the export of American building *ideas* and American building supplies and contractors' equipment. Europe, South America and the Orient are very much interested in the way we build our homes and our skyscrapers and our industrial plants; and they are making use of our labor-saving construction equipment, in many cases operated and supervised by American engineers and contractors.

Since my trade investigation trip around the world, on which I visited forty-nine different foreign countries and established personal relations with many of the leading mercantile houses abroad, I have been gratified to note from the large amount of overseas mail that goes across my desk, the very real and growing interest in the AMERICAN BUILDER and in the products of our advertisers.

I have made arrangements so that the AMERICAN BUILDER is regularly on file and in use in the office of every United States Consul and Consular Agent in every country in the world; and from all reports these magazines are very much referred to, insomuch that importers, merchants, etc., are asking for them. The building designs and ideas are followed and the advertising pages are a buyer's guide and directory for the overseas builders and importers of builders' supplies and equipment.

We receive a great many letters from abroad asking for quotations and for catalogs and other information. I am glad to take care of these personally by letter, and I want to take this opportunity to invite our friends abroad as well as those here at home to write us.

FROM THE AMERICAN VICE CONSUL IN JAVA

Soerabaya, Java.

AMERICAN BUILDER:

I acknowledge receipt of the complimentary copies of the AMERICAN BUILER, with which you have so generously supplied this office. This magazine has been regularly received and placed in the commercial reading room of the consulate, where the last two copies are always on file. The older copies are handed on to the Chamber of Commerce and to various principal firms in this district. In this way it has been found that the magazines, supplied to this consulate, reach the greatest number of merchants and are a real service in the interest of American trade.

(Signed) ROLLIN R. WINSLOW,
American Vice Consul in Charge.

INTRODUCING DUNTILE INTO MEXICO

Holland, Mich.

AMERICAN BUILDER:

This is just a newsy letter giving the story of a very interesting sale we have just completed for Mexico City, Mexico.

One of the most prominent men in Mexico is J. C. De La Lama, who is very closely connected with ex-President Obregon, and who is also a man of great wealth. In fact, Mr. De La Lama is an architect by profession, but spends his money and time developing large real estate deals by putting in roads, sewers and water mains himself and then erecting anywhere from five hundred to a thousand homes. He is unquestionably the highest type of speculative builder and he is also associated with another man of equal calibre, namely: Mr. Leon B. Giraud.

Now, the point of this story lies in the fact that Mr. De La Lama read the September issue of your AMERICAN BUILDER magazine and immediately wrote to us in regard to the Duntile proposition. That started a correspondence which was very interesting and which progressed rapidly to the point where either Mr. De La Lama or Mr. Giraud felt it necessary to make the long trip from Mexico City to Holand, Mich., in order to investigate all aspects of this business.

Mr. Giraud finally made the trip and has just left Holland to return to Mexico. Of course, he purchased the equipment, being entirely satisfied in regard to Duntile. He and Mr. De La Lama are going to try out Duntile in Mexico City by using just one machine to satisfy themselves that they can make the product satisfactorily and that it will reduce their building costs in accordance with our claims. This first machine is, therefore, really experimental, and if everything works out satisfactorily they intend to install a very large number of machines, using most of the product themselves.

Such a large prospective business is, of course, very pleasing to us, and we feel that it is partly due to your magazine. It goes to show that your circulation certainly is very wide indeed and that the AMERICAN BUILDER is read by the most prominent people even in foreign countries.

We thought that you might be interested in knowing of this deal and we take this opportunity of expressing our satisfaction for the excellent results obtained from your magazine, both in America and in foreign countries.

(Signed) W. E. DUNN,
President, W. E. Dunn Mfg. Co.

FROM INDIA

Rajpipla, India.

AMERICAN BUILDER:

We are interested in land clearing and stump pulling equipment to use with our two Fordson tractors to clear new land.

Please send us the address of the manufacturers or sellers quoting price for this equipment.

(Signed) NATVARLAL DAYABHAI & Co.

HISTORICAL AND REFERENCE NUMBER IN GUADELOUPE

(Translated from the French)

La Pointe a Pitre, Guadeloupe, W. I.

AMERICAN BUILDER:

I have the pleasure to ask for information regarding your book which I have had the opportunity of seeing recently. It is your June, 1924, Historical and Reference Number. I have found much interesting information therein.

Is this a regular edition or a special book, and will you send me a copy of it?

(Signed) M. ALEX. AMARIAS,
Entrepreneur Usine Darboussier.

FROM FRANCE

(Translated from the French)

St. Etienne, France.

AMERICAN BUILDER:

I have a copy of your review, AMERICAN BUILDER, dated November, 1924. I should like to obtain all technical information (in French as far as possible) as well as prices and shipping conditions with regard to the builder's hardware firms listed on attached memo.

Kindly obtain for me prices for merchandise F. O. B. New York, although I would prefer F. O. B. Bordeaux or Marseille.

(Signed) MARIUS RANDON.

FROM ENGLAND

Gloucester, England.

AMERICAN BUILDER:

We herewith wish to let you know how much we appreciate your letter dated March 25th, and to inform you that we have received the AMERICAN BUILDER and will endeavor to make the best possible use of same. It has already received considerable attention.

(Signed) WILLIAM T. NICHOLLS, LTD.,
Builders and Contractors.

FROM SCOTLAND

Edinburgh, Scotland.

AMERICAN BUILDER:

I am always interested in the methods and ways of the Western Hemisphere in matters architectural. I will enjoy my subscription to the AMERICAN BUILDER.

(Signed) RICHARDSON & MCKAY, Architects,
By J. R. McKay, A. R. I. B. A.

FROM CHILE

(Translated from the Spanish)

Valparaiso, Chile.

AMERICAN BUILDER:

A copy of the AMERICAN BUILDER has come to hand and we will go through the pages of this great publication thoroughly. Hope to make use of the information contained therein. Will you obtain for us catalogs of the following materials:

Structural Steel, Floor Tile, Casement Windows, Reversible Windows, Industrial Cars, Locomotive Cranes?

(Signed) LEVER & Co.,
Architects and Engineers.

NOTE: For the benefit of our advertisers we will, without charge, translate any foreign language letters referred to us.

AMERICAN BUILDER.

Costly Buildings Erected for Government and Municipal Use

Permanence of Building Material and Durability of Equipment Are Needed for These Buildings

ONE of the latest and finest buildings erected at the nation's capital is the United States Chamber of Commerce, which stands at the corner of Seventeenth and "H" streets, Washington, D. C. This site is historic, as on it there formerly stood an old red brick mansion, at one time occupied by Daniel Webster. Adjoining are the houses of John Hay and Henry Adams and the Dolly Madison and Cameron houses are nearby. Across La Fayette Square stands the White House.

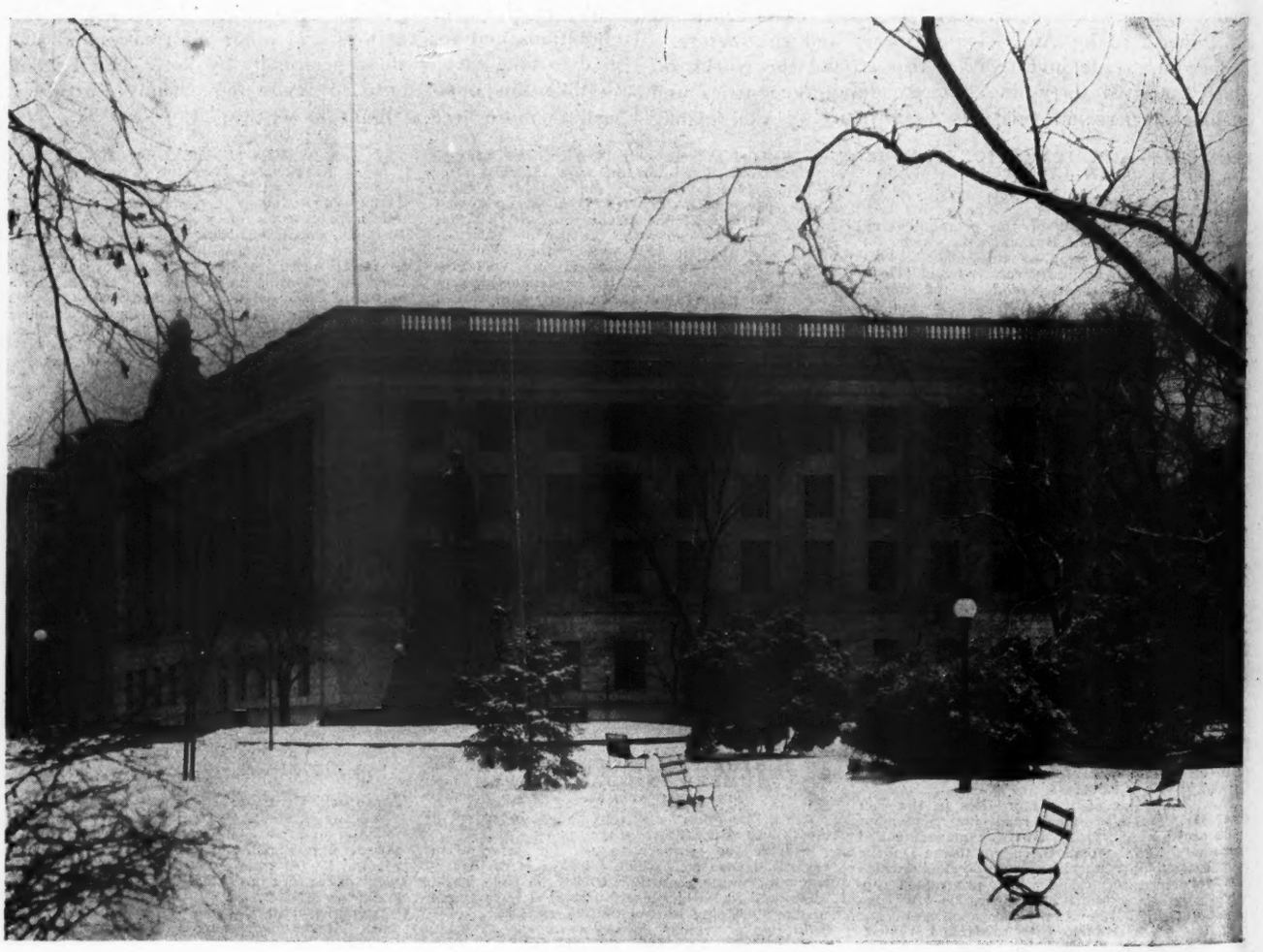
The United States Chamber of Commerce is the national headquarters of the 1,300 local Chambers of Commerce throughout the United States, which have an active membership of over 750,000 corporations, firms and individuals throughout the United States. The movement for the establishment of the National Chamber had its inception fourteen years ago, during the Taft administration, and the fund for completion of the building—$3,000,000—has been contributed by business men, firms and corporations throughout the entire country.

This fine building—designed by Mr. Cass Gilbert, architect, New York City—is necessary to house the officials and clerks carrying on the work. It also provides many fine conference and committee rooms as well as a memorial hall and an assembly room or National Chamber 60 feet wide by 110 feet long and 35 feet in height which seats over a thousand members.

The architecture is of classic simplicity featured by semi-detached fluted Corinthian columns. Many fine marbles are used throughout the walls, floors and stairways of the building. For instance, in the National Council Chamber, there is a border of beautiful marble of a red-brown tint, known as Italian Levanto, and the same material is used as a base for the walls. Memorial Hall is lined with Pouillenay Rose marble—soft gray in color—and the floors are of Roman Travertine, from Italy.

The Centennial Memorial Building, at Springfield, Ill.,—illustrated in the art duotone section of the January AMERICAN BUILDER—is an excellent example of a costly state building, designed to last for many years.

For county court houses and for municipal buildings the materials, construction and equipment are usually of the best. Estimates of the amount to be spent on public buildings during 1925 run all the way from $30,000,000 to $190,000,000.



Just Across from La Fayette Square and the White House Stands the Splendid New Home of the United States Chamber of Commerce—the Nation's Business Headquarters—Mr. Cass Gilbert, New York City, Architect.

Striking Evidence of Prosperity in American Hotel Development

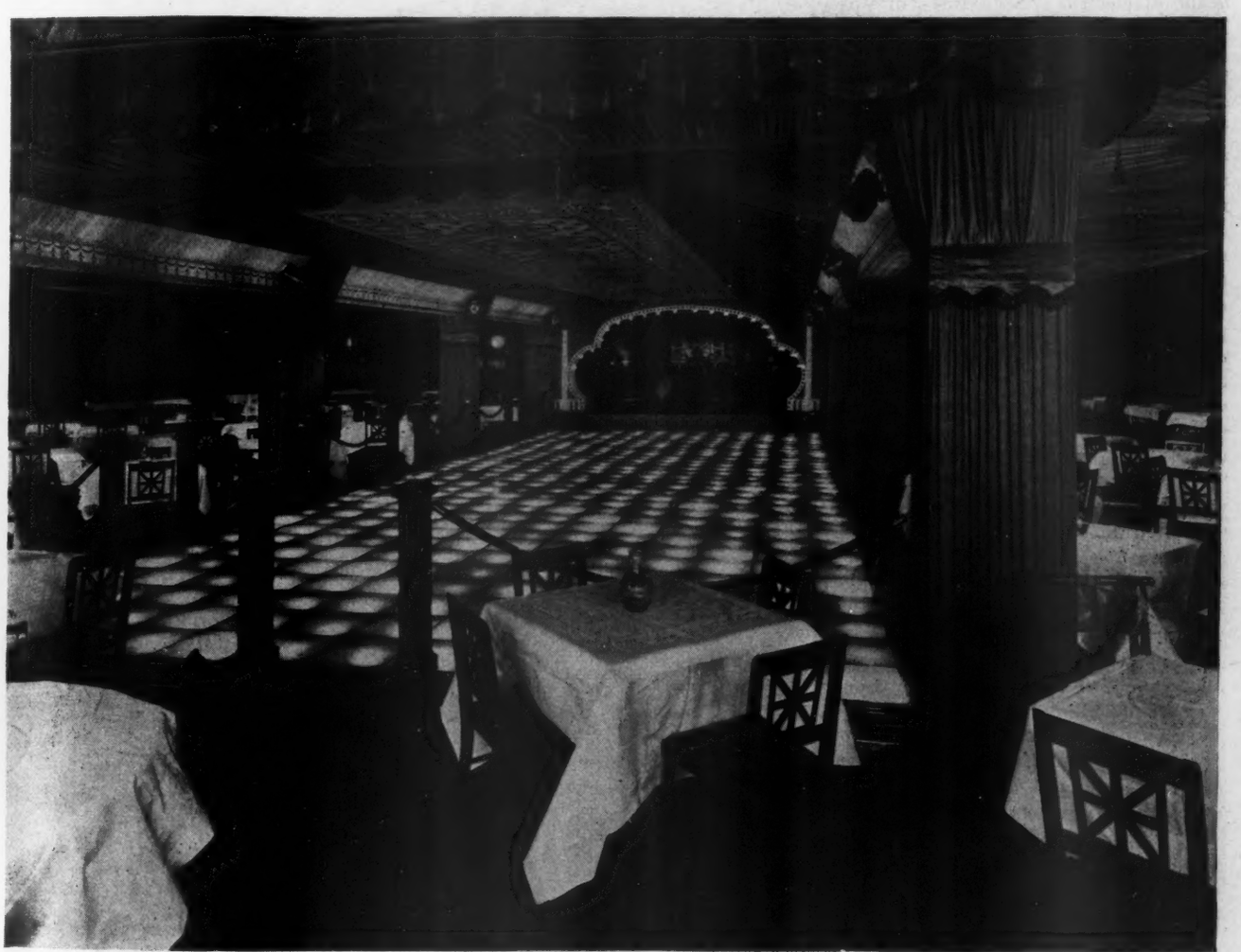
Never Before Have So Many Large Hotels Been Under Construction and Projected

THERE is no more striking evidence of the widespread general prosperity which this country now enjoys than the enormous expansion which is taking place in the hotel industry. Not only are many massive new hotels being erected in the larger cities, but alterations and extensions of great magnitude are being planned to still further enlarge the capacity of existing hotels. This development has been particularly striking in Chicago.

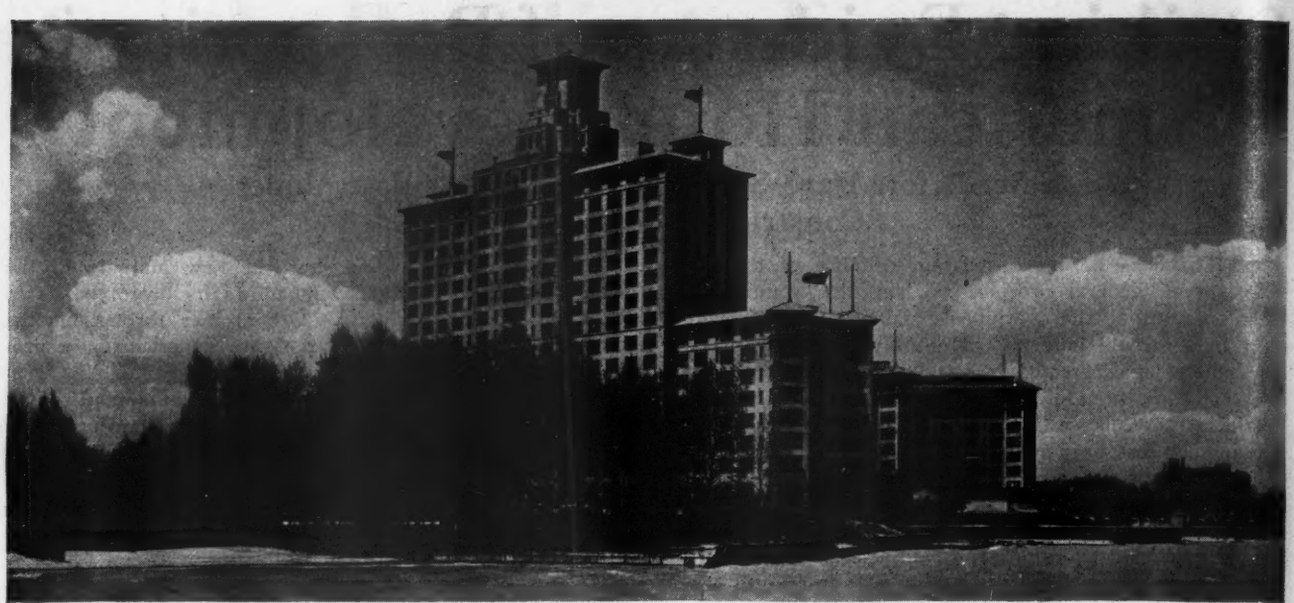
New York has long been noted for its hotel development. As a great ocean port, a financial and merchandising center—the dominating metropolis of the new world—this is but natural. But Chicago is probably the greatest railroad center in the world. And Chicago is now entering a period of hotel expansion which bids fair to make it noted the world over for the size and luxury of its hotels. In fact, the promoters of three recent Chicago hotel enterprises have each claimed theirs to be the largest hotel in the world—the Stevens, the new Palmer House and the enlarged Morrison Hotel. But before construction is started, a project for a larger hotel is announced. The original Edgewater Beach Hotel was a fine building, but the new building of the Edgewater group so far overshadows its prototype as to make it look like a pigmy. Other cities throughout the country—small as well as large—are experiencing a proportionate hotel building activity.

Most hotels built in a central city location are of the steel frame type of construction, with curtain walls of stone or brick. More and more of these structures are being built with floors of reinforced concrete, a form of construction which has many advantages from the standpoint of fire resistance, rigidity and sound-deadening features. The Edgewater Beach Hotel, however, and a number of large hotel buildings all over the country, are of reinforced concrete construction throughout. The illustrations herewith reveal the rich decorative effect of the exposed concrete beams which are painted to resemble wooden timbers and still bear the grain marks of the form lumber.

The central fireplace and chimney in the lounge is a unique feature of this hotel which is greatly admired. Steel sash are used throughout and seem to be finding increas-



This Beautiful Dancing Floor Is a Feature of the Alamo Room in the Clarendon Beach Hotel, Chicago. The floor is of heavy plate glass through which vari-colored lights are thrown on the dancers and the tints changed at the will of the operator, creating a gorgeous spectacle. The plate glass is installed in special steel framing similar to that used for sidewalk lights in daylight illumination, but the sheets of glass are much larger.



The New Edgewater Beach Hotel, Chicago, with Its Pleasing Location on the Lake Front. When your radio set announces "The Voice of the Great Lakes," you can visualize this splendid structure, with its extended wings. Marshall and Fox are the architects of this fine building.

ing favor among hotel designers. The very low radiators under the windows is another noticeable feature, also the beautiful electric light fixtures of this hotel.

The mechanical equipment of a great hotel is truly impressive, including batteries of passenger and freight elevators, immense boilers and refrigerating machinery, kitchen and laundry equipment—immense coal, gas and electric ranges, refrigerators and ice boxes; also water softeners, tanks, washing machines, extractors and mangles, electric motors, compressors, pumps, fans, dumbwaiters, intercommunicating telephones and radio apparatus. Practically all types of floor coverings, furniture and fittings are required. The flooring, wood and metal trim, plumbing fixtures, plaster and decorations are usually the best that the market affords.

A bath in every room seems to be the slogan of the modern hotel and this often includes showers and sprays, as well as the finest porcelain tubs and lavatories. Bathroom equipment always includes cabinets and mirrors—usually of the built-in type.

The new Palmer House, Chicago, and many fine hotels throughout the country, are installing dumbwaiter service in every room, so that clean linen and pressing, freshments, or deliveries of any kind are available at the pressing of a button, and the ubiquitous bellboy will, therefore, be much less in evidence. Fine painting and decoration will continue to find increasing use to make hotels attractive.

Every year sees a greater number of conventions held in hotels, also business and professional meetings of all kinds. This occasions an increasing demand for ball rooms, dining rooms and exhibit display spaces in corridors and special rooms. It seems likely

The Sovereign Hotel, Portland, Ore., Is One of That City's Newest Residential Hotels. Carl Linde, architect, has made extensive use of wrought iron balconies in this design.

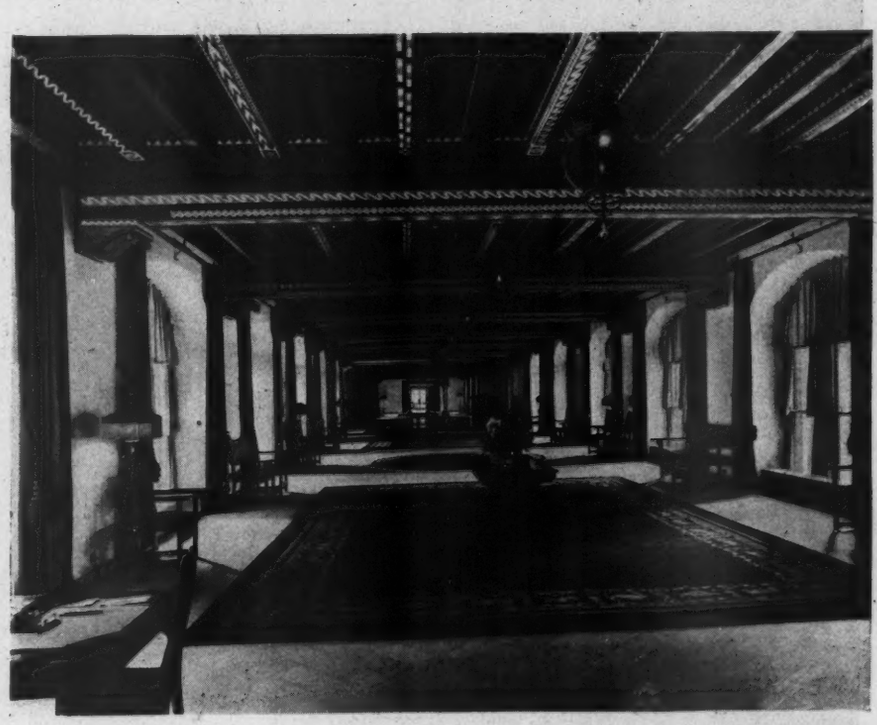
A Unique Effect Has Been Gained by the Central Fireplace and Chimney in This Fine Lounge of the Edgewater Beach Hotel. The sloping beamed ceiling, the columns and the transom window lights above add to the unusual effect—like a baronial hall.

that the convention feature will play an increasingly prominent part in hotel design and that the big hotels of the future will have permanent exhibit halls and special convention rooms arranged in groups for convenient convention use.

Where a hotel has a population of several thousand people, the store spaces have an extra value from the buying power of the guests, as well as the street trade. This has led to the design of corridors so arranged that leased shops will have entrances from both street and hotel corridor and calls for an added display window on the corridor side. Corridors arranged in this way undoubtedly add to the revenue obtainable from shop leases. These corridors are best arranged parallel with the street.

One feature of hotel building contracts—like those for large office buildings—is the necessity for complete contractors' equipment of every kind, to save labor and speed up the work. The sites on which hotels are built usually have a high per-square-foot value and are quite extensive in area. The in-

(*Continued to page 163.*)



A View Down One of the Spacious Corridors of the Edgewater Beach Hotel. Note the rich beamed ceiling effect gained by the reinforced concrete construction. Fine floor coverings add to the luxurious effect of this corridor. Note the very low radiators under the steel sash windows.

Advertising in Steel and Stone Puts a Premium on Architecture

Large Sums of Money Being Spent on Fine Office Buildings Have an Advertising Value as Well as a Rental Income

A PERFECTLY natural economic law tends to force upwards to greater heights the buildings which occupy central city sites. Centralization brings increased land values to those who are fortunate enough to own property where the greatest number of buyers congregate in the shopping and business centers. It is estimated that from 150,000 to 300,000 people pass "the busiest corner" of a large American city every day.

Choice central sites in the Wall Street section of New York are valued as high as $20,000 per front foot and, in Chicago's Loop, at $15,000 per front foot. A corner lot in one of these locations might easily be valued at $5,000,000 or over. A five-story building on such a site would require from tenants an average of $10.00 per square foot, in order to pay the interest on the investment, pay the taxes and other expenses and return a fair profit to the owner. A 20 or 30-story building on the same site, while it would cost at least four times as much to build, would provide enough additional floor space to bring down the rental to $4.00 per square foot or less.

Of the two types of buildings, the high building can be made one of distinction, beauty and pre-eminence—an advertisement in steel and stone of great value to almost any business. And the more notable the building for height and beauty, the greater the value of the advertising. Such buildings as the Metropolitan Tower, the Singer and the Woolworth buildings, in New York, the London Guarantee and Accident Building, the Wrigley Building or the Tribune tower, in Chicago, have attained national—even international—prominence by sheer height and beauty.

Architects, builders, contractors and manufacturers of building material and equipment will continue to profit by the increased number of high buildings required to serve the growing congestion of American business centers. This situation is by no means confined to New York and Chicago, but exists in only slightly modified form in Philadelphia, Detroit, Cleveland, St. Louis, Los Angeles, Baltimore, Boston, Pittsburgh, San Francisco, Buffalo, Cincinnati, Milwaukee, Washington and many other American cities. In fact, there are about 300 American cities where an increasing number of high buildings may be expected.

This situation is a great spur to American architecture. In the twenty-nine metropolitan cities, particularly, a premium has been put on the more beautiful and commanding designs, the graceful and artistic being combined with the utilitarian and profitable. In other words, it has been found that beautiful architecture pays—a situation which insures continued architectural improvement in our cities.

When a group of hard headed business men will cheerfully spend large sums of money for space which cannot be

High Office Buildings Are Not Confined to the Lower End of Manhattan Island, but This Airplane View Does Include More High Office Buildings Than Any Other District of Equal Area in the World.

rented but which does add symmetry, grace and beauty to the building, then American architects may feel that progress is being made. This has happened with a number of office building projects. Public taste is also improving and the future is bright with promise for the improved appearance of American cities, not only in skyscrapers, but also in schools, colleges, churches, state, municipal, business and even industrial buildings.

A high office building represents a tremendous tonnage of building material and equipment, including literally hundreds of items. A skyscraper sometimes represents a dead weight of 100,000 tons of building material and equipment. The Woolworth Building, New York, weighs considerably more than this and the Singer Building weighs 90,000 tons. The Furniture Mart, of Chicago, which, in floor space, is the largest building in the world, contains:

36,000 tons of sand and gravel.
20,000 tons of cement,
21,000 tons of brick,
6,000 tons of reinforcing steel,
745 tons of structural steel,
400,000 square feet of tile partitions,
600,000 lineal feet of steel floor domes,
255,000 square feet of radiators,
1,500 steel window frames,
3,000 steel sash,
310 steel firedoors,
724 store doors,
516 store fronts,
6,600 electric light fixtures.

The Columbian Mutual Tower Building, Memphis, Tenn.; Mr. I. A. Baum, Architect. Though not the largest, this is one of the finest office buildings in the South.

This is but a partial list of the main items and the complete list includes power, heating, lighting and elevator equipment, in addition to hundreds of other items of finish and equipment. Three million board feet of lumber were required for the forms alone, and 7,500 piles were driven under the foundations. The Furniture Mart is an exposition, rather than an office building, but much the same building material, equipment and finish is required.

Estimates of the value of office buildings to be constructed during the present year vary from $250,000,000 to $450,000,000, or about 6 per cent of the national building program. We expect to see the expenditures for this class of buildings increase from year to year as realty values increase and so many of the older, smaller buildings become obsolete and worn out.

The Bell Building, Chicago; K. M. Vitzthum & Co., Architects; McLennan Construction Co., Builders. This is one of Chicago's newest skyscrapers. It fronts on the double-decked Michigan Boulevard, a block south of the river.

Hotel Construction

(Continued from page 161.)

vestment in land, labor, building material and equipment often runs into millions of dollars. Every day of delay means a heavy loss to the owners for interest and deferred profits—perhaps as much as $500.00 per day. Therefore, premiums are usually offered the builder for completion in advance of the date set in the contract and penalties imposed for every day's delay beyond that date.

The apartment hotel has become a fixed feature of modern city life and the erection of these buildings continues on an increasing scale. Reference is made to some recent developments in these buildings in an article on apartment buildings which is printed elsewhere in this issue.

Fine Architecture and Equipment for Apartment House Dwellers

More Light—More Air—More Conveniences is the Slogan of Designers and Builders of Apartment Buildings and Apartment Hotels

BETTER and more luxurious apartment buildings are being built than ever before. Former standards of design and construction have changed and changed for the better. True, rentals have increased heavily but much greater comfort and luxury are being provided in return. The apartment house of the narrow light court, with inadequate sunshine and fresh air, is passing. In fact, the modern apartment house is as carefully studied for orientation as a hospital. The buildings are usually designed in the shape of an "L" or a "U." A great many bay windows are provided. Courts are large enough for lawns and flowers. Usually wings are designed with only sufficient width for single suites, so that the summer breezes may find their way through. The more de luxe type is of fireproof construction and occasionally has two-story living rooms, with galleries at the second floor level, leading to bedrooms.

The building of co-operative apartment buildings continues at an ever-increasing rate because they offer the tenant-owner a fine investment, extra comforts and conveniences and a maintenence cost well below the rental level. Many of these co-operatives are being erected in the better neighborhoods where ground values are high. The present trend is to offset high building and realty costs by revenue-producing features. This is leading to the erection of many semi-co-operative buildings with the lower floors arranged in small kitchenette apartments, for lease. In such buildings, the larger suites occupied by tenant-owners are located on the upper floors. The idea has been carried even farther in some cases, with the lower floors devoted to a sort of European hotel of the better class, with rooms rented on a transient basis.

Typical of the high class, modern apartment building is the recently completed semi-co-operative building known as 3530 Sheridan Road, Chicago. From the windows of this splendid thirteen-story building, there is an unobstructed

This Thirteen-Story Structure Is the Very Latest Type of Luxurious Semi-Co-operative Apartment Building and Is Located on Chicago's Most Fashionable Drive. It is known as 3530 Sheridan Road and looks out over the Waters of Lake Michigan. Rissman and Hirschfeld, Architects.

view of Lake Michigan, looking over and beyond one of the Lincoln Park lagoons. It is of steel, frame, fire-resistant construction throughout, with concrete floors. The main doors to each suite are steel sheathed and set in steel cased frames.

A large section of this building has been set aside by the tenant-owners for lease. These leases produce a handsome revenue which greatly reduces the operating expense of the building and provides the tenant-owners with fine living quarters at low cost. Or it may be regarded, in another way, as an unusually profitable investment for the tenant-owners.

Four passenger and three service elevators of the latest push-button type are operated by attendants. There are forty owned suites of six and seven rooms and 120 suites of four and five-room size for lease. The property on which the building stands is worth about $2,000.00 a front foot and the sale price to the owners is $3,350,000 for building and land.

A ball room, with attached refreshment kitchen,

Living Room in One of the Four-Room Suites, 3530 Sheridan Road. To the left, just out of the camera's range, is a closet containing a disappearing bed.

Shows the Bedroom in This Four-Room Suite with Cheerful Daylight from the Light Court of Ample Dimensions.

is available for dances and social affairs, the use of which is allocated by the tenant-owners' manager. A nominal charge is made for the use of the ball room. There is also provided a children's playroom for the use of all the children in the building.

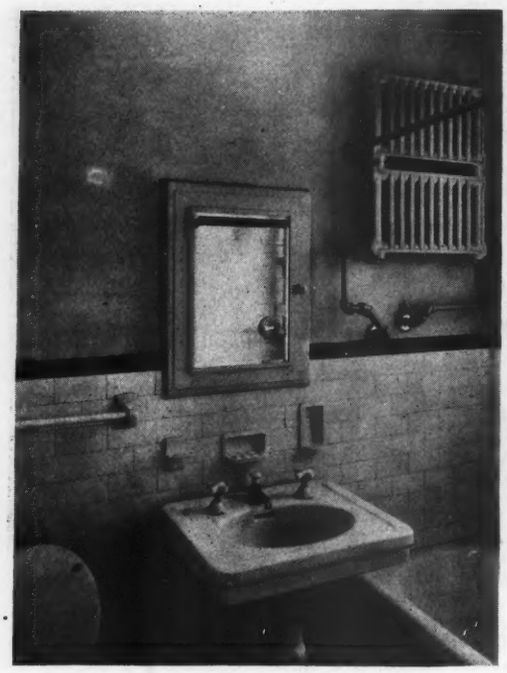
Krenn & Dato, the well-known realtors, planned, sold and will manage the building, reporting to the directors elected by the tenant-owners. There will be complete office, janitor and watchman service. The latest mechanical equipment is provided, including a central refrigerating plant, cooling the refrigerators in each apartment. Running ice water is on tap over each sink. The windows are metal weatherstripped throughout and built-in kitchen cabinets and cupboards are provided in each kitchen, as well as gas ranges and refrigerators. Each living room has a disappearing bed and containing closet. Shades, electric light fittings, painting and decoration throughout are high grade and attractive.

The main lobby or reception room is two stories in height, with handsome plaster ornamentation and fine furnishings. It is in the Adam style of architecture and the entrance hall has stone walls and marble floors.

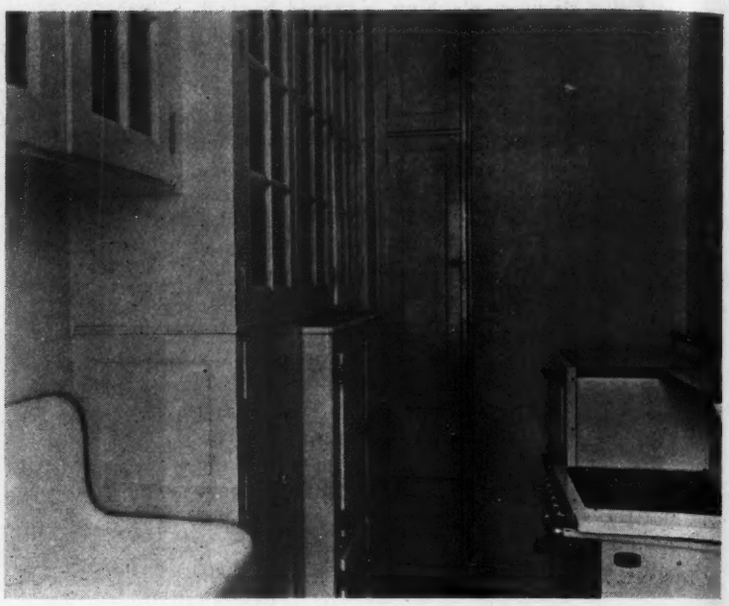
On the main and mezzanine floors are to be found the laundries, equipped with sanitary tubs, gas driers and ironing boards; the store rooms and a series of rooms with public bath for the use of maids, nurses or extra help.

Owners suites' are larger and more luxurious than the rented suites. Every room has one or more large windows which are essential to the light and airy style of the Adam architecture. The master bathroom is located between the bedrooms and has shower stalls and the finest of bath and other fixtures. Master chambers have triple mirrors effectively lighted. All rooms are well supplied with convenience outlets for portable electric lights. Doors and window sills are of light woods;

Note the Handsome Chandelier and the Electric Light Fittings in the Dining Room of This Small Suite. The door knobs are of glass.



A Glimpse of the Bathroom Which Opens Off the Bedroom of This Four-Room Suite. The radiator is high up on the wall, to save space. Rubber curtains for the shower bath slide on the rod which is visible over the edge of the tub.



Small Compact Kitchens Are Provided with Every Modern Convenience, Including Iceless Refrigeration and Running Ice Water. A kitchen cabinet is just out of sight at the right, flanking the entrance from the dining room. Note the ample provision of shelving and compartments visible.

bathroom thresholds and sills are of marble. All walls in the entire building are canvased except closets. One enters the apartment through a wide and spacious gallery, softly lighted by the rich glow from side bracket lamps, connecting the drawing room with the dining room.

All of these rooms being very large, airy and of almost old world proportions, form a magnificent suite for entertaining the "honored guest." Perfect temperature is maintained by the use of a vacuum heating system with modulating valves. All woods and all metal fixtures throughout the building are solid and genuine.

This building has such a favorable location and is so well planned and built that the promoters expect the rental revenue to repay the purchase price and the interest on the loan, thus providing the forty tenant-owners with free living quarters.

The number of apartment hotels in the large cities has

Reception Room of the Vernon Manor Apartments, Cincinnati, Ohio. Note the deep window embrasures, the beautiful period furniture and the fine plaster ornamentation.

Exterior View of the "Vernon Manor," a Particularly Fine Apartment Hotel in Cincinnati. Note the extensive grounds, U-shape, towers and terra cotta ornamentation of this splendid building. Samuel Hannaford & Sons, Architects; Garber & Woodward, Associate Architects.

been steadily increasing and now forms a very considerable item in the annual building program. These are of two general types—the furnished and unfurnished apartment hotel. Hall service only is given. Some of these apartment hotels are being built on the co-operative plan. The "Marlborough," on Lincoln Park West, Chicago, is a good illustration of a co-operative hotel, the tenant-owners occupying the front suites and the others being leased on the apartment hotel basis.

The Lake Shore Drive Hotel, at 181 Lake Shore Drive, is one of Chicago"s finest and most modern apartment hotels. The suites are all furnished. It has a beautifully decorated and equipped public dining room with arched windows, period furniture, elaborate lighting fixtures and expensive window drapes. The main lobby is decorated in Italian Renaissance effects and the lounge on the eighteenth floor is sumptuously furnished and decorated. A silken canopy of apricot colored silk softens the illumination from the skylight and a promenade around the entire building commands bird's-eye views of lake and city.

The "Surf" is another of Chicago's large and luxurious apartment hotels, in which there are a number of kitchenette apartments. Several views of these are shown herewith.

Breakfast Room of the "Surf," One of Chicago's Recently Erected Apartment Hotels. Note the Colonial furniture of this cheerful breakfast room.

Kitchenette in the "Surf" Apartment Hotel, Chicago. This is an alcove off the breakfast room but is particularly complete in the matter of cabinets, shelving, built in china cabinets. The sink is almost hidden by one of the china cabinets.

Progress in Education Transforms American Schools

Expenditures for New School Buildings and Equipment Are Increasing Every Year, to Meet Progressive American Ideas

IT is natural that there should be a continual betterment in all classes of buildings, but in none has it been so pronounced, so radical and so rapid as in school buildings. It might be said that a "wave" of school rebuilding has swept over the land. And in that first sweep it left a good many high spots to be reached later. In fact, the truth seems to be that any school not built within the last seven or eight years is hopelessly "out of date" and unfitted for the most modern educational methods. This means, of course, that the already great activity in school building will still further increase.

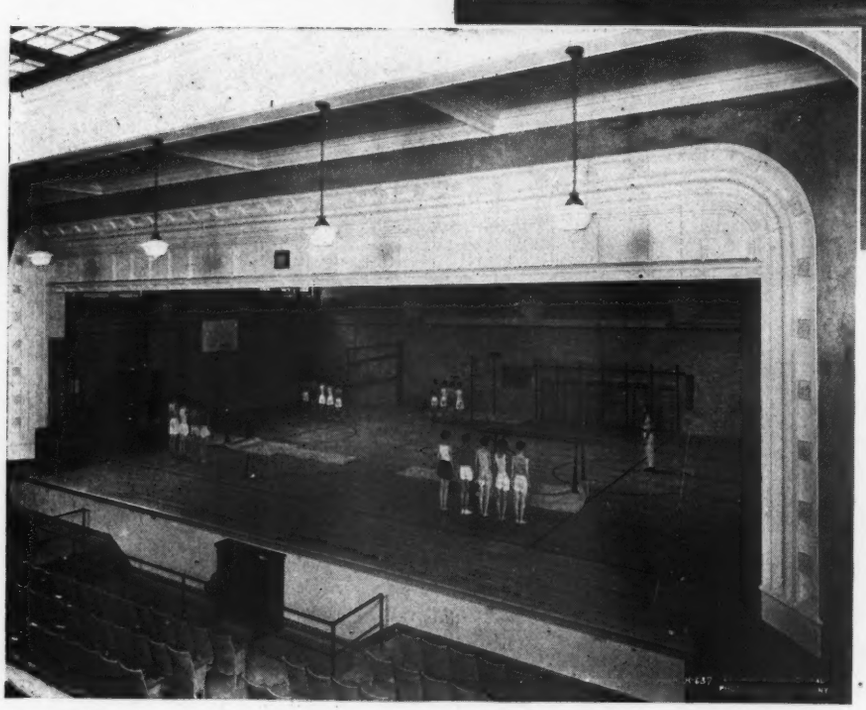
The main difference between the old school buildings and the new has been best described by Mr. William B. Ittner, of St. Louis, one of America's leading school architects. The old style of school building he describes as the "closed type" and the modern as the "open type." In this respect, there is a resemblance between hospital buildings and school buildings—larger sites and more extended orientation for light and air.

A good deal of the change in methods, buildings and equipment is probably due to the influence of the universities. Athletics—in and out-doors—has been a prominent feature of college life; so the high schools have adopted the gymnasium, the swimming pool and the campus or athletic field. And the grade schools are not far behind. They, too, have their school games and need gymnasiums. The class play, the class party, commencement exercises and occasions when it is desired to assemble and address the entire school, create a need for school auditoriums.

Then, too, the modern school is essentially a community center. Lectures and entertainments are frequently held there. Parents are taking a more active part in conducting school affairs. Parent-teachers' associations have been organized in hundreds of school districts and this movement has led to the planning of community rooms in most new high school buildings and will probably also become one of the grade school features.

Modern parents are not content to leave the education of their children entirely in the hands of teachers and school boards. They have stepped in closer, as it were, and become a more active factor in educational and hygienic matters. Parents are becoming convinced that there is something wrong with a school from which their children are continually bringing home colds and contagious diseases. More attention is being paid to cleanliness and hygiene. Shower baths are installed in many of the modern schools and there are trained nurses in attendance.

Auditorium, Stage and Gymnasium Are Combined in This Fine Community High School at Dundee, Ill., Designed by J. G. and Ralph Llewellyn, Architects.



In Addition to Regular Gymnasium, Drill, School Basket Ball Games and Other Athletic Contests Are Staged Here. The auditorium is also used for commencement exercises, lecture and entertainment purposes.

Another factor in the elaboration of school buildings is the progress toward practical and scientific training—such as domestic science, manual training, business training, etc. Most modern schools have domestic science rooms, sewing rooms, manual training rooms, physical and chemical laboratories, also business training rooms, in addition to the regular class rooms. Perhaps the most successful feature of manual training is the woodworking shop and students now taking these courses will find the training of great benefit in later life, particularly in the building field. The equip-

(*Continued to page 207.*)

This Exterior View of the Dundee Community High School Shows That It Is of Average Size. The architects, J. G. and Ralph Llewellyn, have provided a building with the latest educational features, but one which could be built at the minimum cost.

Here, in the Girls' Sewing Room, a Training in Needle Work Is Given More Thorough Than the Average Home Training. In addition to work tables and sewing paraphernalia, this room is completely equipped with sewing machines.

This View Shows the Chemical Laboratory of the School, Which Has Sufficient Equipment for Experimental Chemistry as Taught Here. Delicate scales and similar equipment are stored in the cabinet at the left.

Domestic Science Is Taught in Most High Schools. This room in the Dundee School is well equipped with enamel-topped tables, and cabinets, gas plates, sinks, etc. Note the alcove dining room which is intended for training purposes only. Many schools also have an extensive cafeteria, usually run by professionals, for student lunches.

This is the Community Room of the Dundee School for Parent-Teachers' Meetings and Similar Uses. This room, while simple in its appointments, presents an inviting and cheery appearance. Commmunity clubs are usually allowed the free use of such rooms in most cities.

A Well Designed Private Garage Makes the Home Complete

Almost Every American Home Needs a Garage and Garage Construction Is One of the Most Important Items in the Annual Building Program

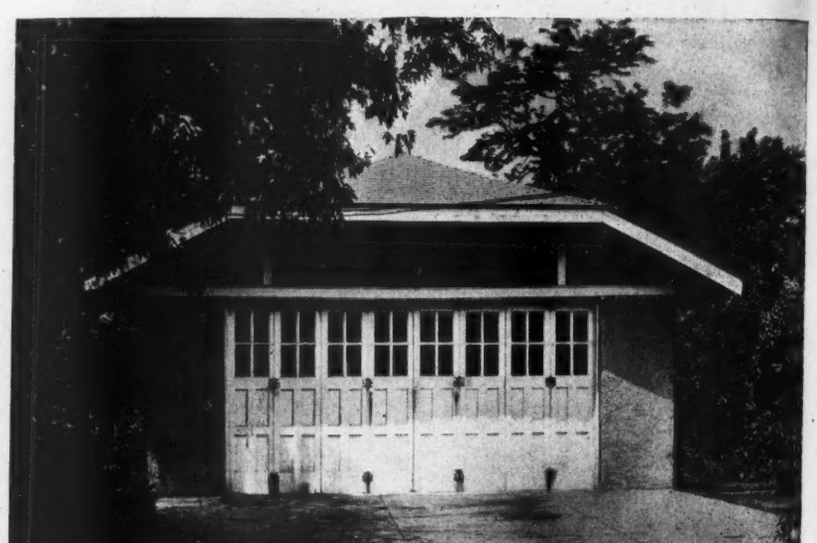
SO widespread is the use of the automobile that practically every American home needs a garage. This is well indicated by the important place—from the standpoint of both number and value—which the private garage has assumed in the national building program.

A garage is no longer merely a detached building but a permanent and important adjunct of the house itself. Its design should harmonize with the house design in such a manner as to produce a pleasing group effect. It does not require to be a small replica of the house in order to harmonize with it. But, often certain outstanding features of the house design can be reproduced to advantage in the garage. For instance, if the house has very wide eaves, wide eaves on the garage will harmonize. If the house is of painted wood frame construction, the garage had best be of a similar construction and color. The same is true of brick, stone, stucco or any other building materials. The roof covering on the garage should also match that on the house. These things are essential to cause the house and garage to appear as a group, rather than as separate buildings without relation to each other.

If the lot on which house and garage stand is of such shape and size as to allow it, the garage driveway will add to the appearance of the grounds if curved, rather than straight, and this also lends itself well to a return route so essential where delivery trucks use the driveway, or to a turning space so that cars can be backed out of the garage on a short turn, allowing for a forward drive instead of an awkward back drive all the way to the street.

Probably the most important features of any convenient garage are its doors, and the manner in which they are opened, held, closed and locked. In selecting the type of doors to be used, the location of the garage and its relation to street or alley, as well as its size, must be taken into consideration. Are the doors to slide—to slide and fold—to swing out or fold in? If a garage gives directly upon an alley, it is not wise to have the doors hinged to swing outward, and in some cities, it is forbidden by the building code. If the garage gives upon a private drive, the hinged, outward opening doors are very inexpensive and easy to apply. The doors, however, should be of good construction, so braced that they will not sag. Good long hinges, substantial in design and appearance, should be used. It is very important to have, with this type of garage door, a door holding device which will hold the doors open and prevent them from swinging back into the path of the car. Some doors of this type are barred shut on the inside with a wooden bar across the full width of both doors. Where this is done, it is essential to have a separate, narrow entrance door. In fact, a separate entrance door is essential with any type of door which is locked from the inside. The separate entrance door is usually equipped with a spring latch and key of the night latch type.

The importance of good garage doors and hardware cannot be too strongly emphasized as no garage can give satisfactory service without them. The hinged



Double Stucco Garage with Doors Arranged in Eight Panels to Fold and Slide.

Double Garage with Hinged Doors Properly Equipped with Hold Back Rods.

Popular Type of One-Car Garage.

doors which sag and drag are equally as much a nuisance as those which are insecurely held and blow shut just as you are about to drive in.

The correctly designed modern garage door presents an attractive appearance and the glazing in the upper portion is useful and ornamental as well.

Sliding garage doors and sliding-folding doors of several types are on the market—some of them quite ingenious in their operation. Straight parallel sliding doors are often used on two-car garages. These doors depend from hangers which roll on parallel tracks, passing each other so that but one can be open at a time.

Sliding-folding doors usually consist of a number of narrow doors hinged together and sliding on track hangers. These are usually arranged in threes or fours for the width of a single car. Thus, a two-car garage would have six or eight of those hinged, sliding doors. Doors of this type are easy to handle and require but little effort to open or close. In the three-door arrangement, one of the narrow doors is sometimes hinged separately. This is first opened and then the two-door unit slides and folds back. When arranged in fours, it is usual to have two two-door units slide and fold to right and left.

One arrangement which is very convenient in some garages on account of its space-saving features and the full clearance which it gives is the door which slides around at right angles inside the garage. Still another is counter-weighted and lifts up like a roll-top desk.

Good foot-bolts and sockets are quite important to real garage security and convenience.

A turntable in the garage approach has been found convenient where the grounds and approach are of such a nature as to prevent an easy and natural turn. Such turntables

Two-Car Garage with Parallel Sliding Doors.

are on the market and are surprisingly easy and convenient to operate.

Adequate lighting—both daylight and artificial—is important to the usefulness and convenience of a garage. A supply of running water is also advisable. To heat or not to heat is a moot question, but every year more garages are heated. Certainly, if the owner or his chauffeur expect to do adjusting and repair work in the home garage, it is almost a necessity. A variety of garage heaters are now procurable—from coal and wood stoves to gas and electricity. The gas hot water heater is quite popular, also the gas-steam radiator.

The electric door-opener, so far, has been mainly used in commercial garages and repair shops where there is frequent traffic.

Three-Car Garage with Doors Arranged to Fold and Slide.

Homes in COLORS

Freedom of Action

By WILLIAM A. RADFORD
President and Editor-in-Chief of American Builder

IT is a pathetic sight to see a man in a rented house—or worse yet, in a city apartment—trying to give vent to the natural impulse to build something, and afraid of what the owner or janitor will say!

Take radio, for instance. At a guess there are about fifty million radio fans, large and small, in the United States at the present time. Each has his own idea about how a set should be coupled up and how the aerial should be built.

The roof aerial!—ah, that's the trouble. There have been in the last year probably more fights with the landlord or the janitor over roof aerials than any other one thing. You go up onto the roof of a rented house with all good intentions for anchoring one end of an aerial, or for putting up a pair of towers, and the first thing you know the landlord or the janitor calls you down. Claims you are breaking the shingles and making leaks in the roof. Says he doesn't like the looks of your aerial, anyway.

To those living in apartment buildings it is even worse. The roof is covered with aerials, every fellow trying to get his up the highest so that he can get the best reception. The roof is a jungle of wires until the owner or the janitor gets mad and tears them all down.

Now the man in his own home has freedom of action to do as he likes. A man's house is his castle; and if he wants to put up an aerial on his roof, it is his own business.

Every normal boy has the instinct to hammer and to build. This should be encouraged. It is the real creative instinct. It is a good investment in the home to provide a little workshop where the boys, and their dad as well, can build things. It is hard to do this in a rented house and next to impossible in a city flat.

There is another instinct which is just as deeply rooted as the creative instinct. Man is a product of the soil which always has and still does furnish him with the means of living. Everyone knows the desire to own some portion of the earth's surface, no matter how small, which he can call his own. Down under the surface of even the most hardened city dweller there is the desire to plant something and watch it grow. For the family that owns its home, this instinct is easily gratified and results in beautifying the grounds which are the setting of the home.

But what of the apartment house dweller and the occupant of the rented house? With the apartment there simply is no such thing as a yard. It does not exist. With the rented house the case is little better. There may be a yard of a sort; but of what use is it? Do you suppose the landlord will stand for your digging around, making gardens, planting shrubs or trees or any of the other things you may be inspired to experiment with? It is not likely; and even if he will, what is the use?

When moving day comes you may have to get out and leave all your pet rose bushes behind for someone else. Shrubbery, trees and lawns take time to grow and develop to their best; and watching them grow is half the pleasure. There is not much incentive to do these things if you do not know whether you are going to be there to get the benefit of them.

How different it is for the family that owns a home. There is an old joke, which reappears each spring in the daily papers, about the commuter on his way home with a new rake, a bag of grass seed and under his arm a book on raising radishes. But the joke isn't on the commuter after all. The real joke is on the man shut up in a city apartment where the only grass is a small plot completely surrounded by cement walk and wire fence and guarded by a large "Keep Off the Grass" sign.

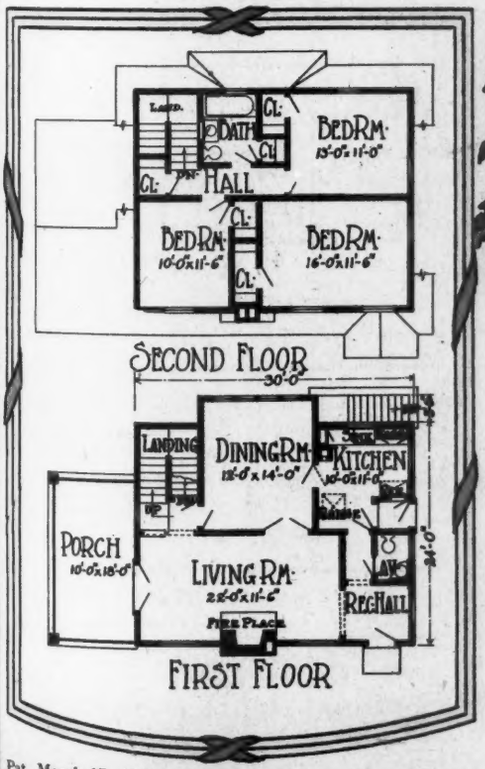
When you own your own home how simple it is to fix up a shop in the basement or in the attic or back in the garage! When you own your own home you can have a yard where you may dig to your heart's content with no one to tell you you are injuring the property. Freedom of action is what the home owner possesses and enjoys, and it is worth a lot of money!

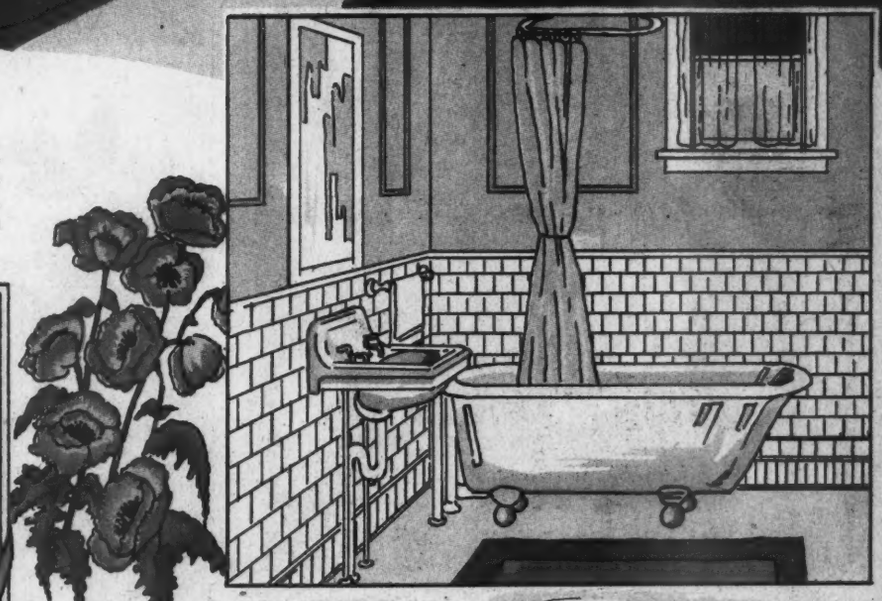
This Roof Aerial Looks Good to the Owner-Occupant of This Pretty Little Home. He put it up himself and no one can order it down. In your own home you're your own boss!

COLORPLATE I-I

The INVERNESS

AN English type home of charm and distinction, containing six rooms. Notice the unusual stairway opening off the big living-room. Color sketch to right illustrates bathroom with combined tub and curtained shower.





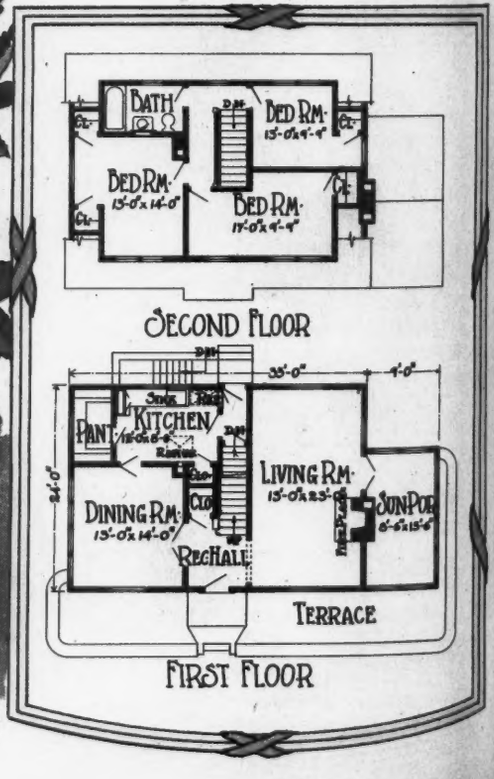
The Pony Express of the Early 50's

Pat. March 15, 1921 and Sept. 30, 1924. Copyright 1925, Wm. A. Radford, Chicago.

COLORPLATE I-II

The INTERVALE

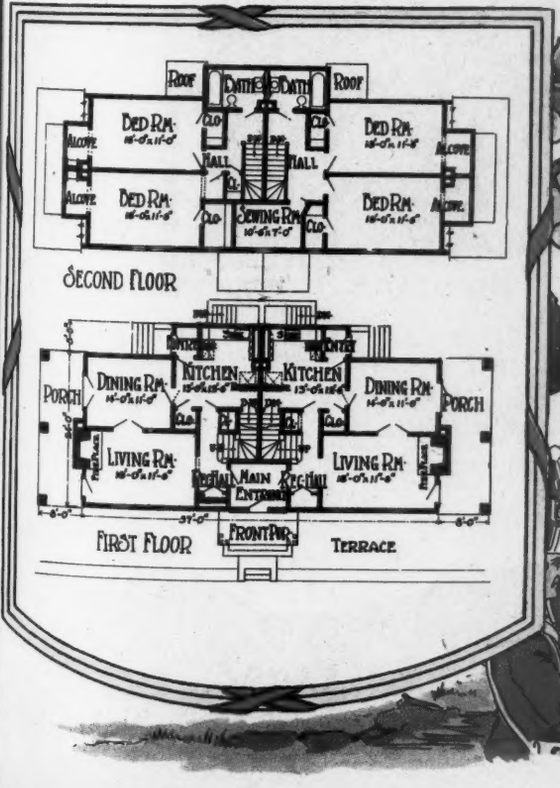
A DELIGHTFUL design featuring the low eaves and prominent gables of the English cottage. Six rooms and bath, besides the big sunroom are provided. Color sketch to left shows a stairhall similar to this but in a larger house.

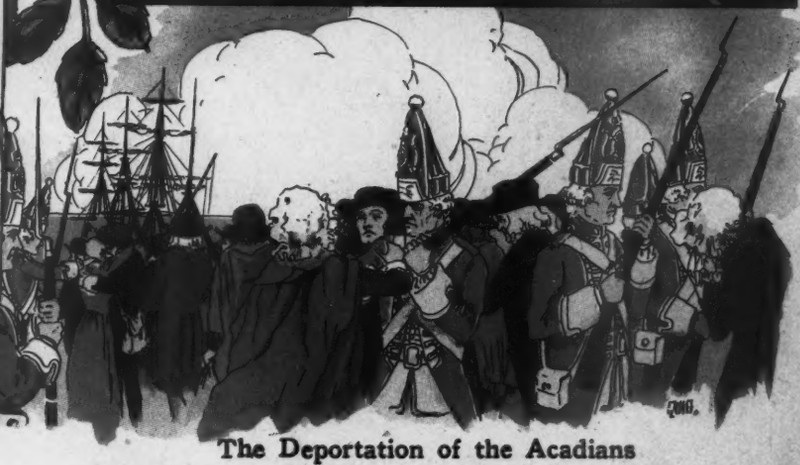


British Retreat from Lexington, April 19, 1775

The INDEPENDENCE

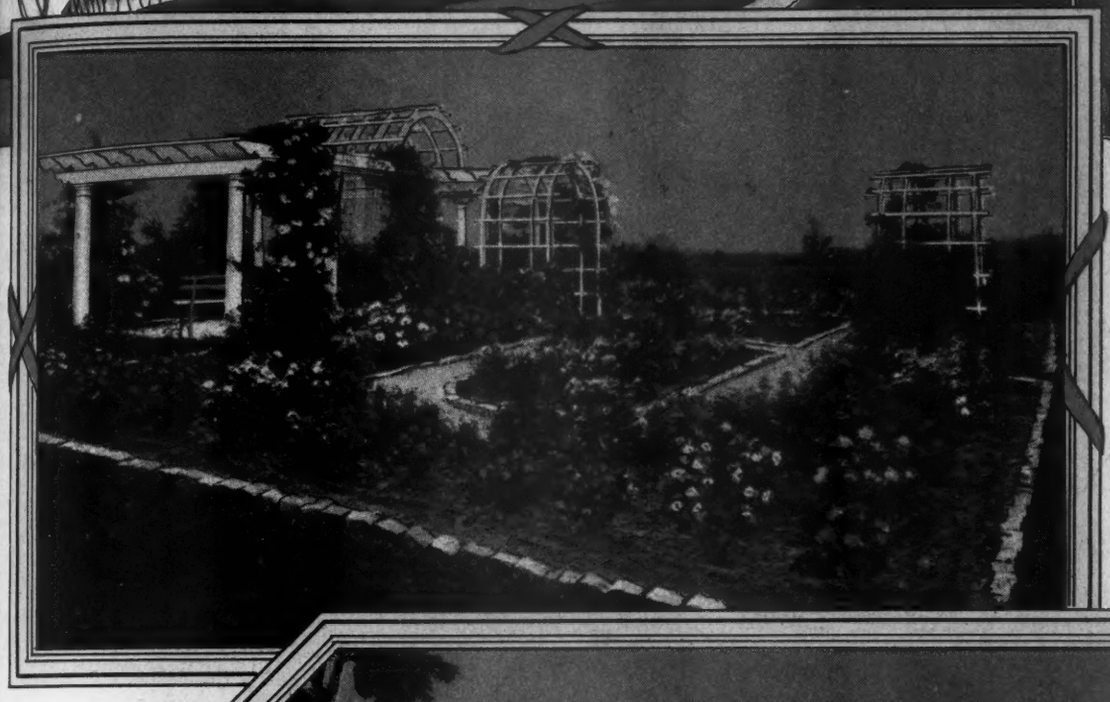
A DUPLEX or double house. Five rooms and bath on a side. The main extrance is shared in common, but otherwise each family has its complete privacy. Color sketch to right suggests attractive furnishing for bedroom.





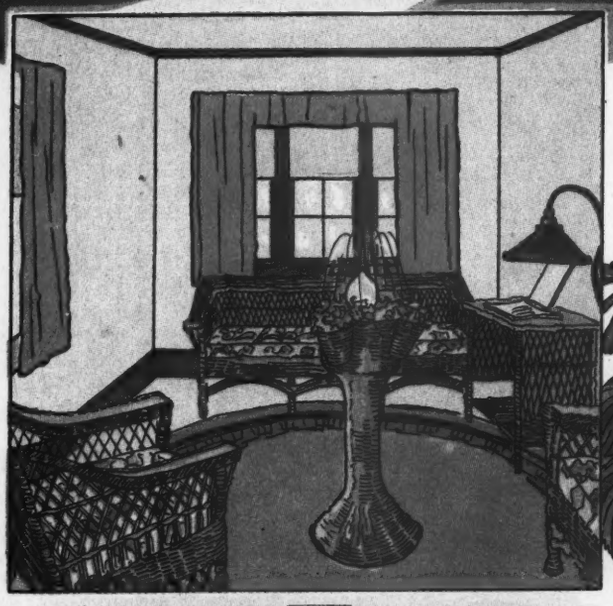
The Deportation of the Acadians

A ROSE trellis around a group of windows with a pergola treatment above, makes a beautiful, homey detail that is decidedly worth building. Perhaps you can get your roses to grow like these!



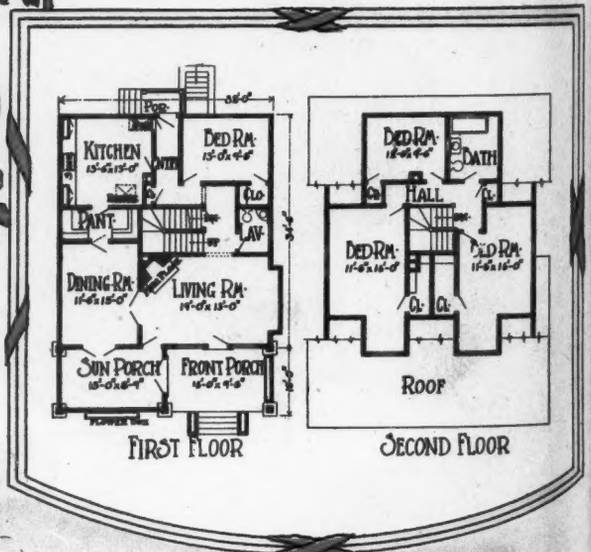
THE pergola in the background of this rose garden invites you to stop and rest and enjoy the flowers. Two rose arbors placed in line with the central arch of the pergola shelter tie this garden together very effectively.

Here is an inviting spot where the beauties of nature have been given a graceful arrangement and a suitable background. The Winged Victory is the central feature of this garden.



The IDAVILLE

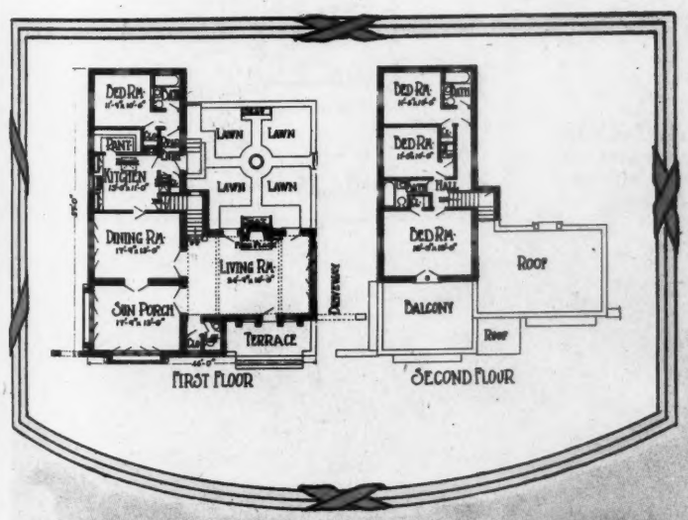
POPULAR Western bungalow design with wide cornice and exposed rafters. Seven rooms and bath. Half of the big front porch is enclosed for a sunroom. Color sketch to left suggests good furnishings for this sunroom.

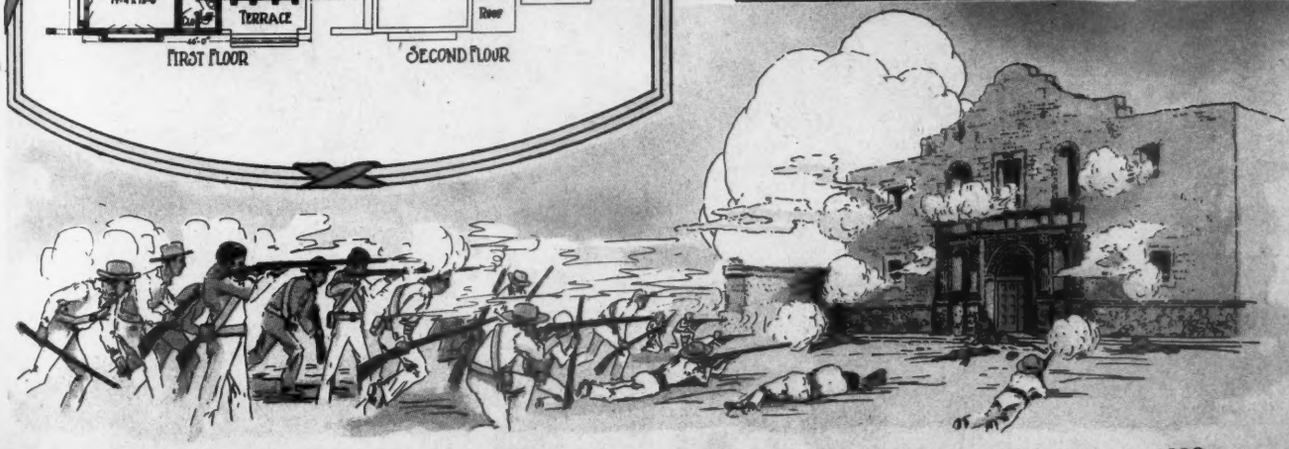


Gen. Custer's last stand June 1876

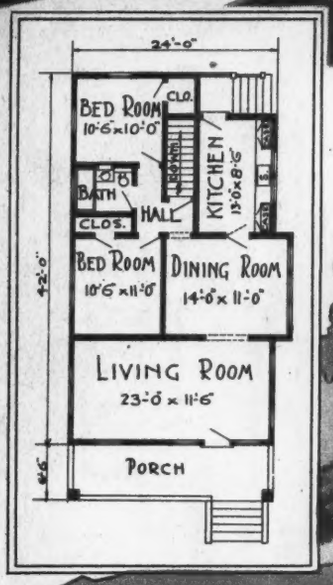
The IBERIA

A HOUSE design from Old Mexico suggestive of the Cliff Dwellers. The walled-in garden back of the living-room and the big roof balcony are features of this design. Color sketch to right shows glimpse of living-room.



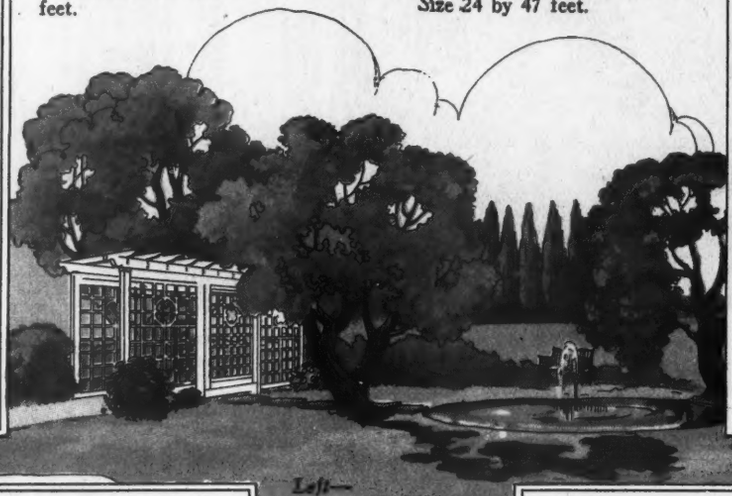


Battle of the Alamo, 1833



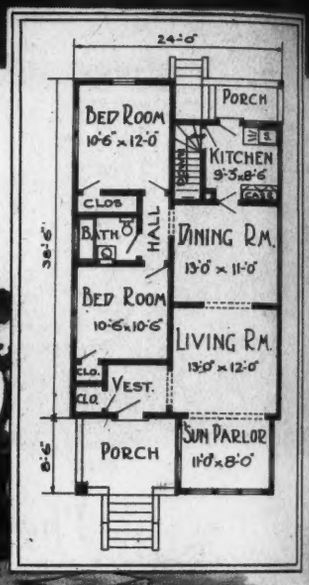
The IDLEWILD

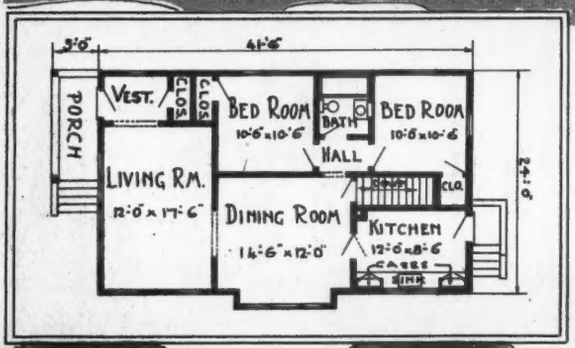
Five rooms. Size 24 by 42 feet.



The IDALIA

Five rooms and sunparlor. Size 24 by 47 feet.





Left—

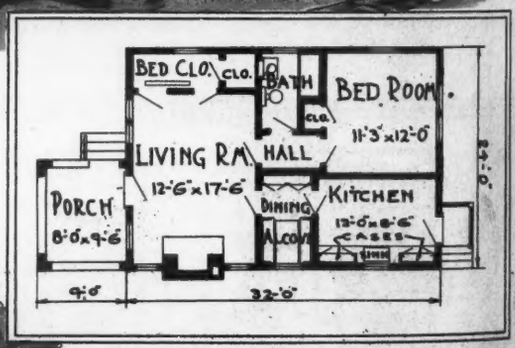
The IVONDALE

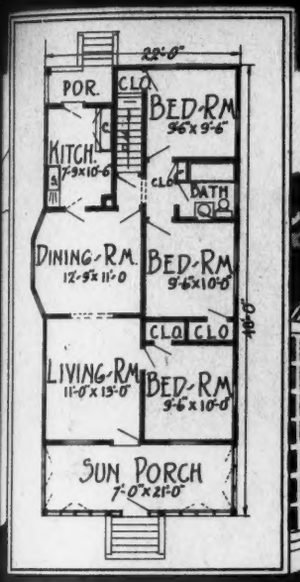
Five rooms. Size 24 by 41 feet, 6 inches.

Right—

The INGLENOOK

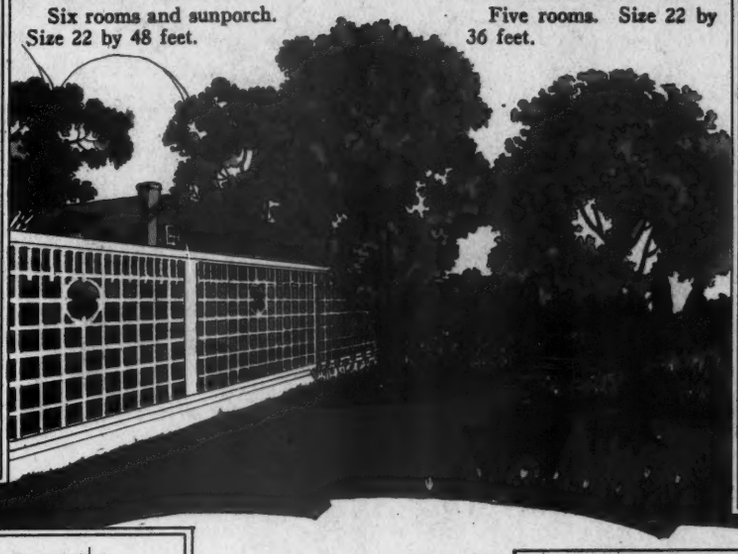
Three rooms with five-room efficiency. Size 24 by 32 feet.





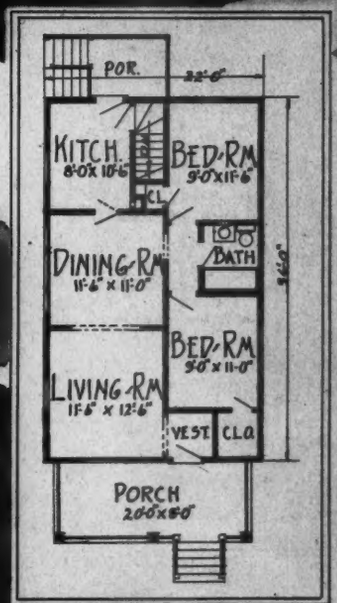
The INWOOD

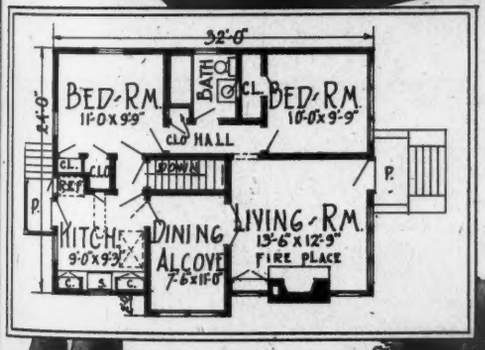
Six rooms and sunporch. Size 22 by 48 feet.



The ITASCA

Five rooms. Size 22 by 36 feet.



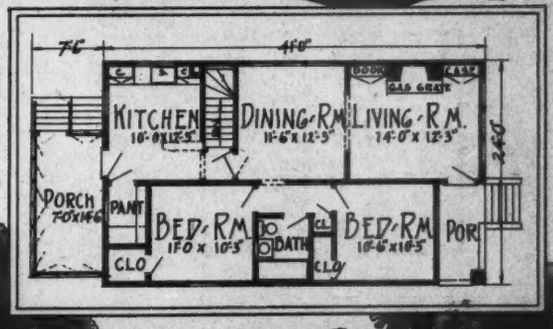


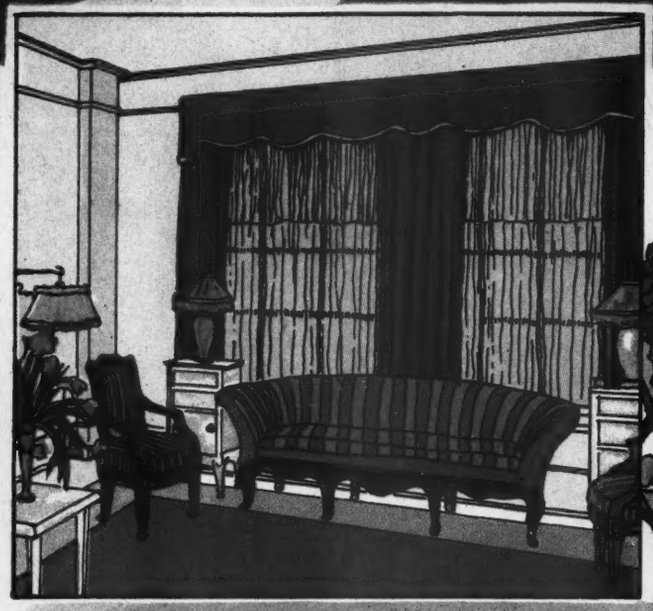
The IVY

Five rooms. Size 24 by 32 feet.

The IOLA

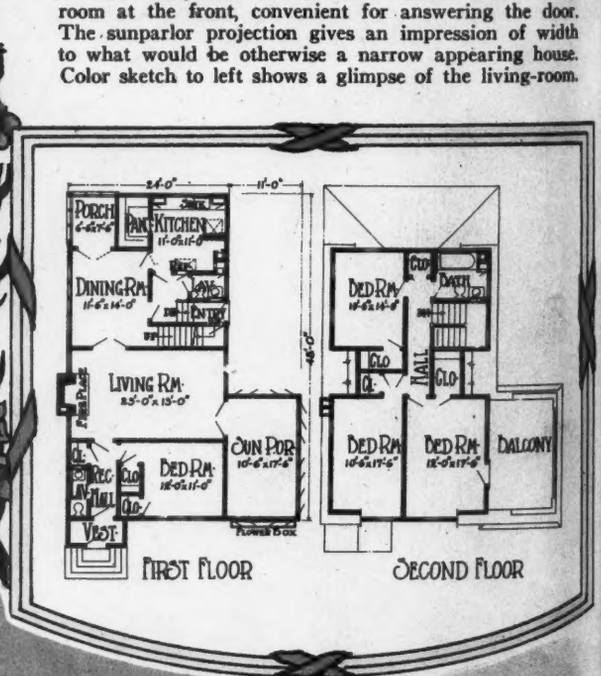
Five rooms and screened porch. Size 24 by 48 feet, 6 inches.





The INDIANHILL

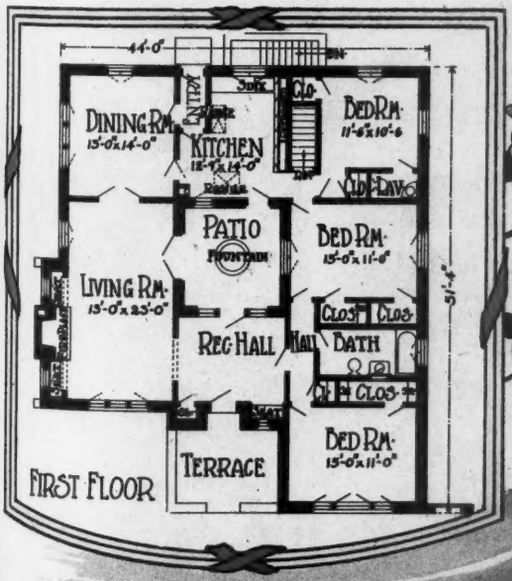
A CHARMING English cottage with seven rooms and sunporch. A well liked feature is the maid's room at the front, convenient for answering the door. The sunparlor projection gives an impression of width to what would be otherwise a narrow appearing house. Color sketch to left shows a glimpse of the living-room.

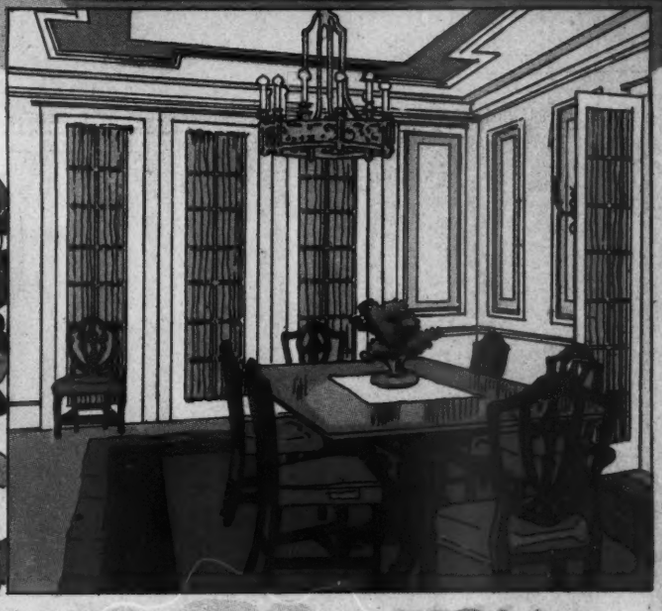


The Oregon Trail, 1848

The INGOMAR

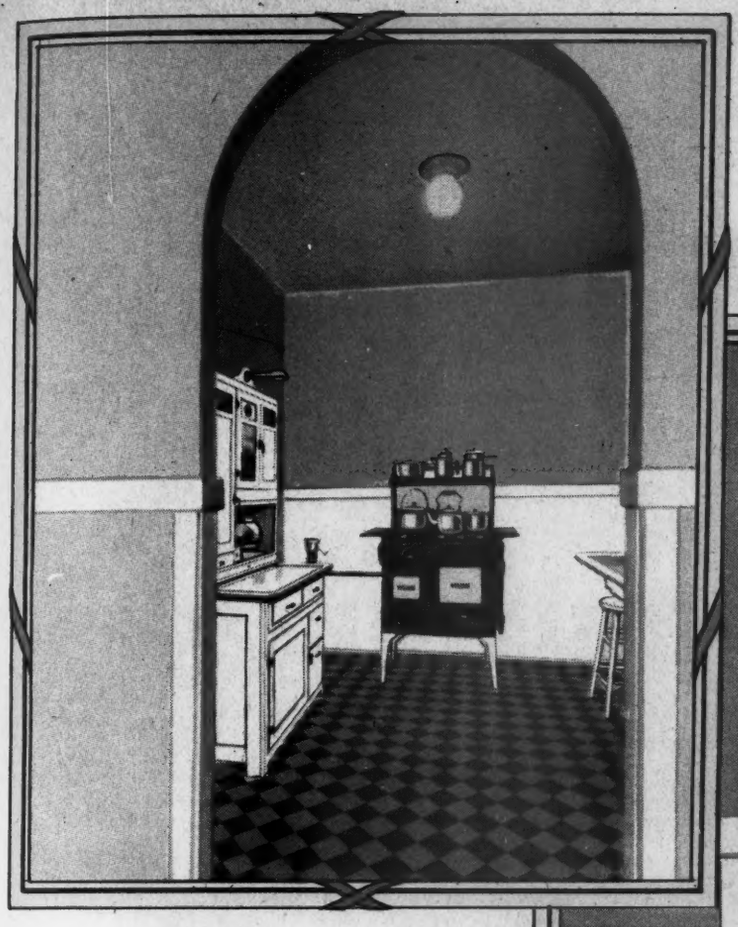
A STRIKING Spanish design containing three bedrooms, large living-room, dining-room, kitchen, reception hall and central patio with fountain. Size overall 44 by 51 feet. Color sketch to right shows appropriate furnishings for the dining-room.





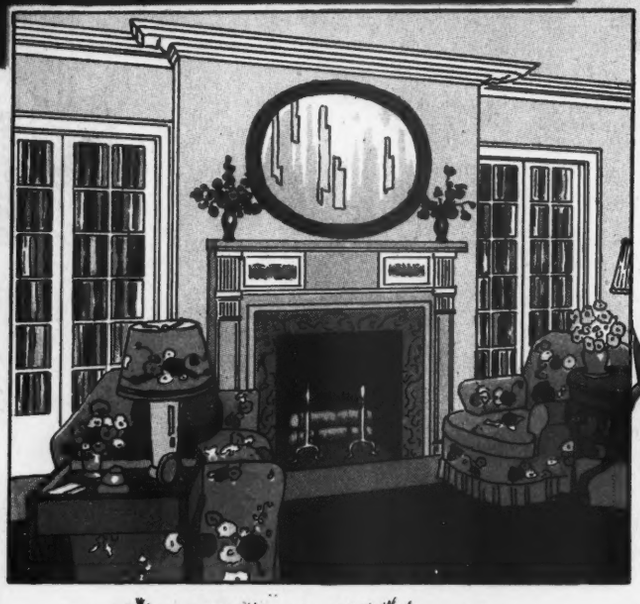
May 1541—De Soto Discovers the Mississippi River

The "Thrift Cottage" of a Seattle Department Store Displays



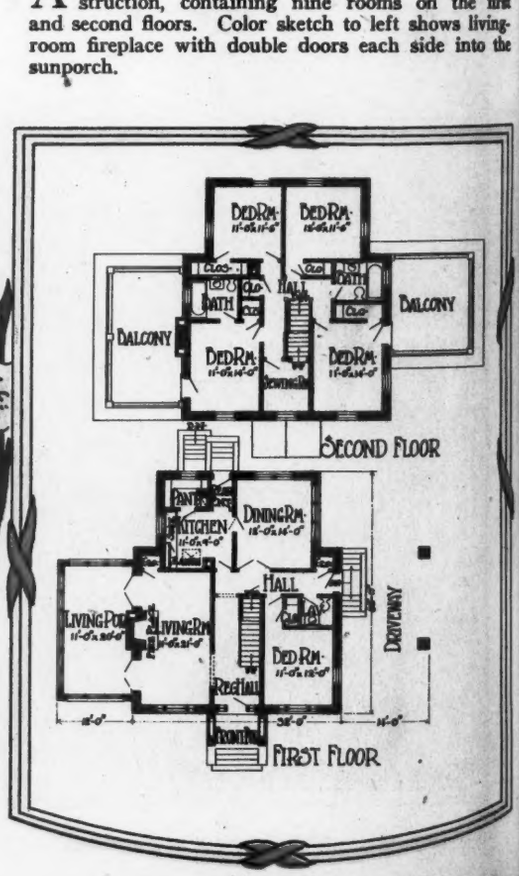
THE circle bead plastered arch is very much favored today by architects and interior decorators.

these Authentic Home Furnishings in this very attractive way.



The IROQUOIS

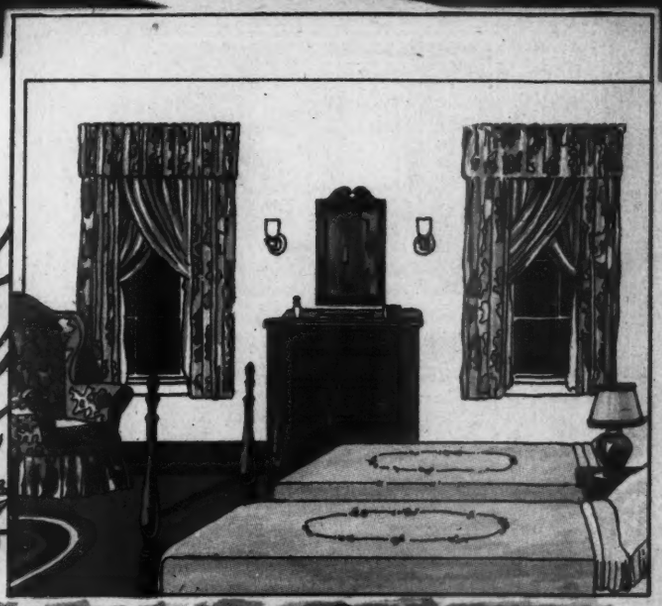
A SUBSTANTIAL Colonial home of brick construction, containing nine rooms on the first and second floors. Color sketch to left shows living-room fireplace with double doors each side into the sunporch.

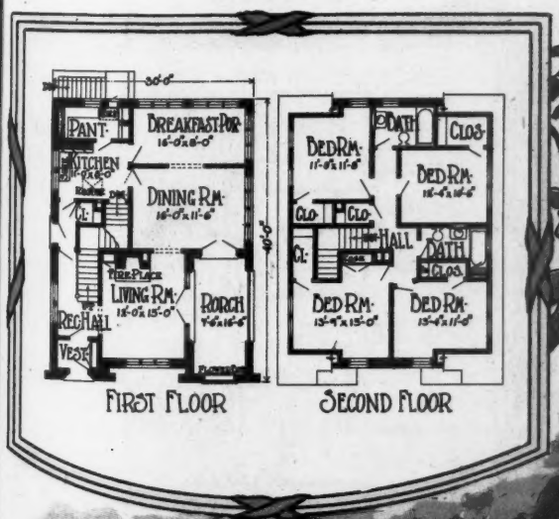


Gen. Braddock's Defeat, July 8, 1755

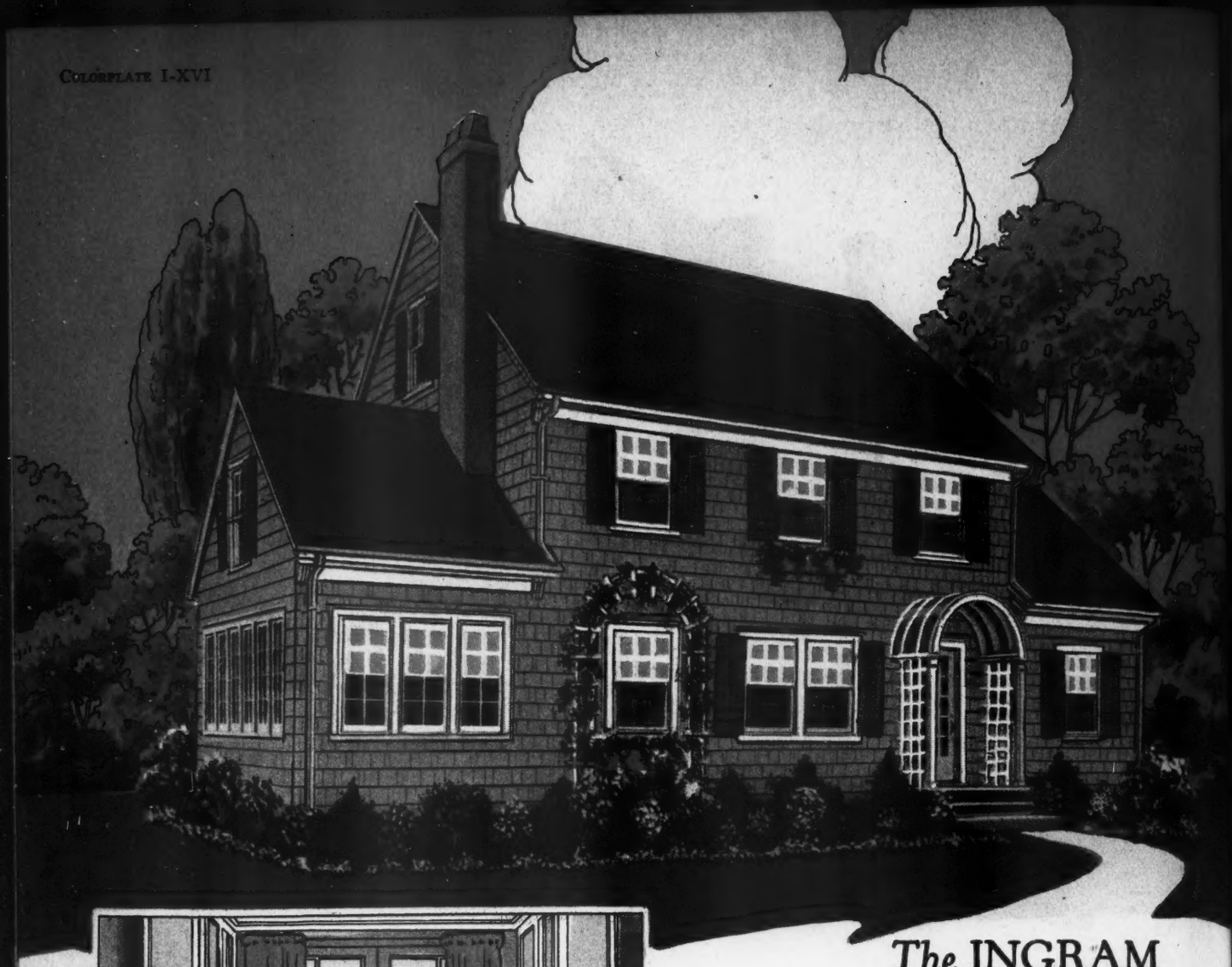
The IVANHOE

AN English design of character, containing eight rooms. The big, open porch off the living-room and dining-room, with brick arch balancing the entrance is a feature of this design. Color sketch to right illustrates a well furnished bedroom.



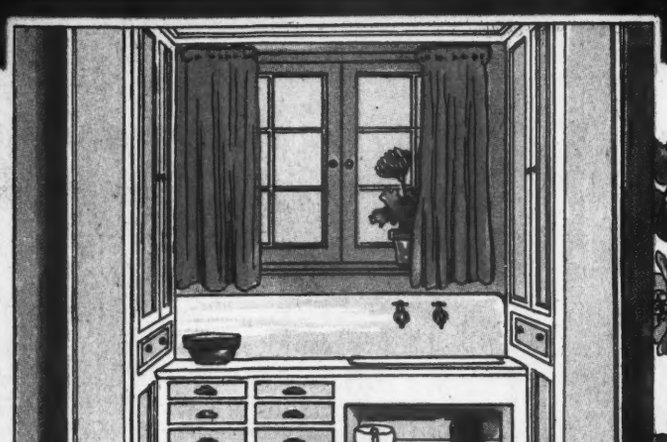


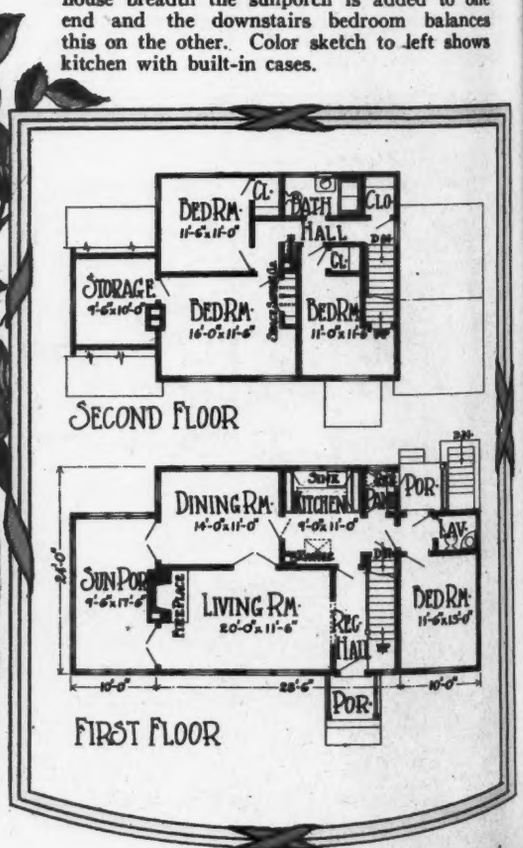
Capture of Nathan Hale



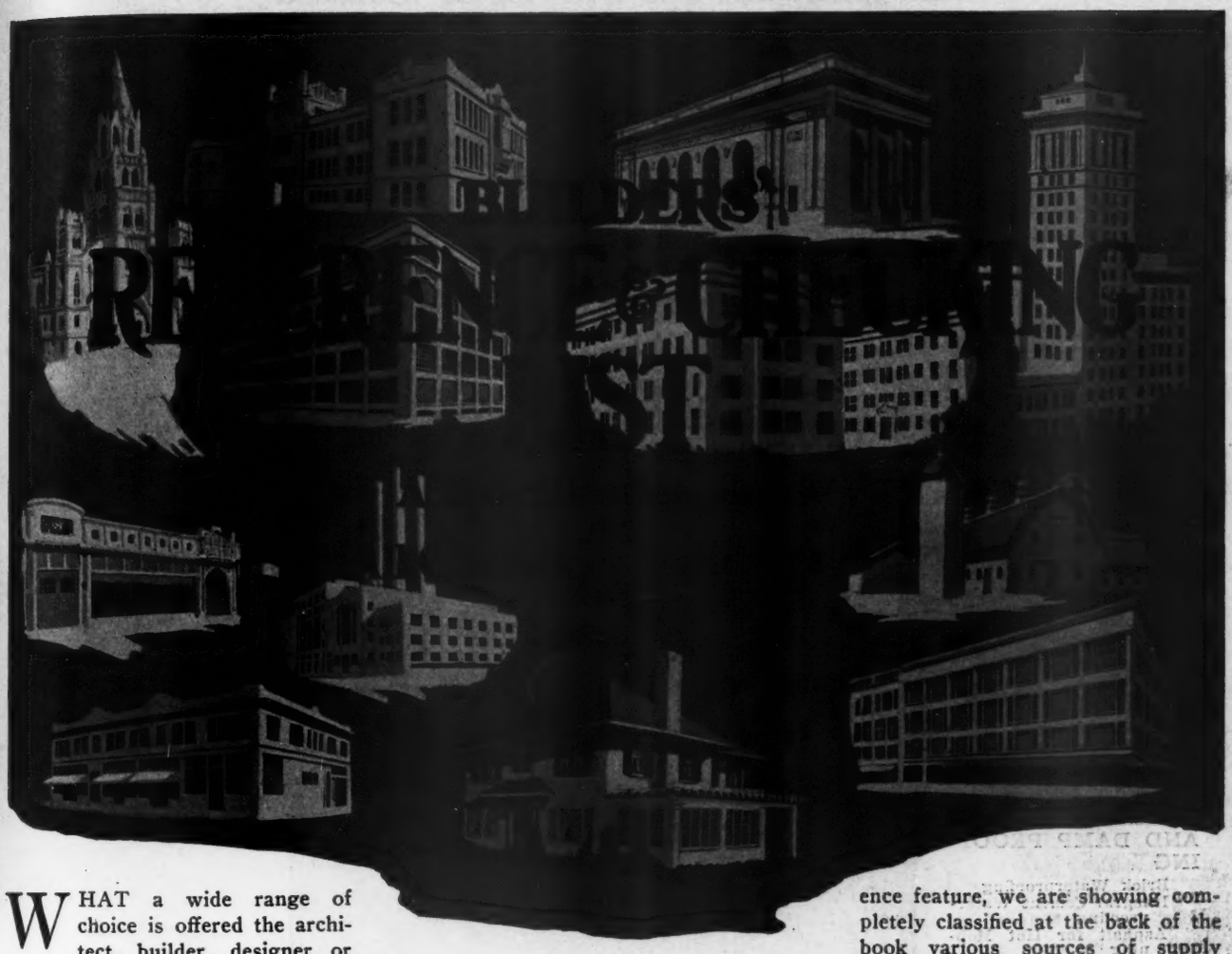
The INGRAM

THE main part of this English cottage measures 24 by 28 feet, six inches, and contains six fine rooms. Then to give the house breadth the sunporch is added to one end and the downstairs bedroom balances this on the other. Color sketch to left shows kitchen with built-in cases.





Signing the Compact on the "Mayflower" Nov. 11, 1620



WHAT a wide range of choice is offered the architect, builder, designer or specification writer in planning any type of building, from the simplest home to the most costly cathedral or "sky-scraper"! And yet how few designers take full advantage of this choice and consider the whole range of material and equipment which is offered. Of course, it is easier to stick to well established methods and the commoner materials and equipment. But no one planning a building should ignore progress. The world moves and evolution is going on all the time. To merely "keep in the rut" and repeatedly specify about the same materials and equipment without studying all possibilities would put a stop to progress.

On the contrary, architects, builders and designers have shown progressive tendencies and a desire to keep abreast of all developments in the building field. It is with this thought in mind that AMERICAN BUILDER offers a comprehensive and carefully prepared checking and reference list. It is a complete compendium of building material and equipment.

You are invited to make full use of this list—to test its helpfulness for yourself. You will be surprised at its suggestive value. Even though you are well posted, it is sure to bring to mind something which might have been overlooked—put before you alternative features not before considered. And if it does not, you will have the satisfaction of knowing that your work has been 100 per cent and that nothing has been overlooked.

Even the prospective owner of a new home has much to gain from a careful examination of this list. It will surely be a revelation to him and put before him possibilities which he had not before considered.

In order to give the greatest practical value to this reference feature, we are showing completely classified at the back of the book various sources of supply where this material and equipment can be secured. For instance, take the item of sash and doors; you may find certain special types of sash—steel or wood, casement or double hung—which you would like to investigate. By turning to the classified list at the back of the book you will find under "Window Sash" a list of manufacturers of both wood and steel sash with a reference to their catalog pages in this special reference number of the AMERICAN BUILDER.

And to still further supplement this service, you may write to AMERICAN BUILDER for information desired in regard to any material not fully described in our pages or for any sources of supply not included in the classified list. You will be advised by mail where such material or equipment can be secured and any information or details which are obtainable.

The building industry, as a whole, owes a great deal of its progress to those manufacturers who have perfected and made available these many items of material and equipment used in the nation's buildings. They have shown themselves on the side of progress. They have led the way and have frequently risked large investments of capital to bring out improvements and to educate architects and builders to their advantages.

Modern tendencies require more complete equipment in the home in order to add comforts and conveniences as well as to make housekeeping pleasant and attractive. By including all these items of complete modern equipment in the original plans and estimates, their value can be included in the original building loan. This simplifies the financial problem for the home owner and budgets his complete requirements in with the house payment or payments.

For Full List of Contractors' Equipment, Power and Hand Tools, See Pages 291 to 297.

BUILDERS REFERENCE AND CHECKING LIST

Private Dwellings

FOUNDATIONS

- Anchor Bolts
- Anti-Freeze Compounds
- Common Brick
- Portland Cement
- Cement—White
- Crushed Rock
- Slag
- Form Lumber
- Metal Forms
- "Ideal" Wall
- Gravel
- Sand
- Lime
- Hydrated Lime
- Cinder Block
- "Economy" Wall
- Concrete Block
- Concrete Tile
- Cinder Units
- Hollow Clay Tile
- Cut Stone
- Cement Accelerators
- Cement—Alumina
- Calcium Chloride
- Reinforcing Steel
- Reinforcing Wire Fabric
- Concrete Bond

WATERPROOFING AND DAMP PROOFING

- Brick Waterproofing
- Integral Cement Waterproofing
- Asphalt for Hot Mopping
- Lime Waterproofing
- Waterproof Membrane—Asphalt Saturated
- Waterproof Cement Coating
- Paint and Compounds
- Floor Hardening Compounds
- Calcium Chloride
- Preservative and Finishing Coats for Brick, Stone, Concrete, etc.

FRAMING

- White Pine
- California White Pine
- Southern Pine
- Spruce
- Idaho White Pine
- North Carolina Pine
- Pondosa Pine
- Fir
- Hemlock
- Larch
- Fabricated Steel
- Fireproof Studs
- Pressed Steel Beams
- Metal Studding
- Pressed Steel Joists
- Channel Iron
- Metal Columns
- Rolled Steel Structural Shapes
- Steel Lumber
- Roof Trusses—Steel
- Roof Trusses—Wood
- Plates and Bars
- Steel Rivets
- Steel Lintels
- Wood Columns
- Steel Structural
- Bridging, Floor and Roof, Wood
- Bridging, Floor and Roof, Steel

WALLS, CEILINGS AND PARTITIONS

- Anchor Bolts
- Architectural Iron Work
- Bronze Ornaments
- Concrete
- Granite
- Marble
- Marble—Artificial
- Limestone
- Lintels—Reinforced
- Sandstone
- Slate Structural
- Artificial Stone
- Efflorescence Remover
- Rolling Partitions
- BRICK
  - Common
  - Face
  - Hollow
  - Rough Texture
  - Glazed or Enameled
  - Hollow Units
  - Brick Bonds
  - Ventilating
- Lime Mortar
- Lime-Cement Mortar
- "Ideal" Wall
- "Economy" Wall
- "California" Wall
- Concrete Inserts
- Skintled Brickwork
- COLORS
  - Brick
  - Mortar
  - Cement
  - Stucco

Type of Frame Colonial Home.

- Portland Cement Mortar
- Bricklayers' Cement
- Brick Veneer Base (Wood Lath and Insulation Combined)
- CONCRETE MASONRY
  - Block
  - Cinder Block
  - Tile
  - Tile Wire
  - Cinder Tile
  - Brick
- Tile (See Tile—Floor and Wall)
- TERRA COTTA
  - Architectural
  - Enamel or Glazed
  - Polychrome
- Cement and Mortar Colors
- Furring Channels
- SHEATHING BOARDS
  - Lumber
  - Cane Fiber
  - Asbestos
  - Gypsum and Paper Board
  - Mineral Wool
  - Wood Strips and Asphalt Felt
- SIDING
  - Pine Lumber
  - California White Pine
  - Idaho White Pine
  - North Carolina Pine
  - Pondosa Pine
  - Redwood
  - Cypress
  - Red Cedar
  - Spruce
  - Fir
  - Poplar
  - Bevel
  - Bungalow
  - Drop
  - Clapboards
  - Sheets—Galvanized
  - Shiplap
  - Stained Wood Shingles
  - Steel Siding
  - Siding Clips—Metal
  - Siding Corners—Metal
- SHINGLES
  - Asbestos—Asphalt
  - Asbestos—Cement
  - Red Cedar
  - White Cedar
  - Cypress
  - Redwood
  - Hemlock
  - Stained
  - Asphalt—Rock Surfaced
  - Twin
  - Four-In-One
  - Metal
  - Hip Shingles—Embossed Metal
- INSULATING MATERIALS (See Roofings, Insulating Materials and Building Papers)
- STUCCO
  - Volcanic Lava
  - Gypsum
  - Lime
  - Magnesite
  - Portland Cement
  - Stucco Pebble Dash
  - Waterproofed
- STUCCO BASE
  - Stucco Reinforcing
  - Asphalt Coated Rock Surfaced
  - Asbestos Board
  - Wood Fibre Board
  - Cane Fibre Board
  - Concrete Block
  - Cinder Concrete Block
  - Concrete Tile
  - Cinder Concrete Tile
  - Concrete (Poured)
  - Concrete Gypsum (Poured)
  - Gypsum and Fibre Board Combined
  - Insulating Base
  - Wood Lath
  - Wood Lath and Asphalt Felt Combinations
  - Metal Lath
  - Metal Lath—Self Furring
  - Expanded Metal Lath Bolts
  - Clips—Galvanized
  - Furring, Wall—Cinder Concrete
  - Furring, Wall—Metal
  - Furring, Wall—Gypsum
  - Fabric Wire
  - Welded Wire Fabric
  - Woven Wire
  - Metal Lath and Mineral Wool Sheathing Combination
  - Welded Wire and Waterproofing Paper Backing
  - Fabric Wire and Waterproof Paper Backing
  - Woven Wire and Saturated Paper Combination
- Gypsum Concrete (poured in forms)
- PLASTERS
  - Asbestos
  - Gypsum (Hard Wall)
  - Oxy-Chloride
  - Plaster of Paris—Calcined
  - Magnesite
  - Lime
  - Keene's Cement
  - Plaster Bonds, Bituminous

For Sources of Supply, See Classified Index, Pages 460 to 496

Private Dwellings—*Continued*

Plaster Fibre
Gypsum Plaster Board
Clips for Plaster Board
Base Screeds
Base Bead
Rib Lath
COVE BASE
Composition
Cork
Cork Composition
Metal
Quarry Tile
Rubber
Slate
Terrazzo
Tile
Plinth Blocks—Rubber
Corner or Rail Beads
Corner Beads for Metal Lath
Angles—Expanded Metal
Angles—Iron and Steel
Grounds for Metal Base
Spot Grounds
Copper Alloy Sheets
WALL BOARD
Wood Fiber
Enamel Tiled
Fibre Board—Processed
Gypsum and Fibre Board
Cane Fiber
Asbestos
Wood and Gypsum
Wall Board Fasteners—Self-Clinching
TILE—FLOOR AND WALL
Bath Room Interior Trim
Ceramic
Enameled Metal
Gypsum
Mastic
Mosaic
Marble
Marble—Vitreous
Sanitary
Glazed Faience
Terrazzo
Fibre Wall
Hollow—Back-Up and Partition
Cinder Back-Up and Partition
Concrete
Entrances
Fireproofing
Load Bearing
Faience
Paving
Glazed
Rubber Floor
Rubber Wainscot
Rubber Plinth Blocks
Rubber Cove Base
Rubber Strip Flooring
Cork
Cork Composition
Fibre Floor
Flashing Blocks
Vitrified Clay
Coping Tile—Vitrified Clay
Coping Tile—Cinder Concrete
LUMBER
Cedar
Pine
Fir
White Fir
Hemlock
California White Pine
Idaho White Pine
North Carolina Pine
Larch
Pondosa Pine
Spruce
Birch
Gum
Walnut
Oak
Mahogany
Asbestos
Creosoted
Pressed Steel
Battens—Wood
Battens—Metal
Metal Corners
Calking Compounds
Wall Brackets
CEILINGS
Metal
Plaster
Suspended
Wood
Studding Sockets
Stove Pipe Thimbles
Partitions—Metal

BUILDERS' HARDWARE

Anchors—Building
Area Grates
Awning Equipment
LOCKS
Master Keyed and Latches—Mortise Cylinder
Front Door
Corridor, Room and Closet Door
Communicating Door
Sliding Door
Cabinet
Flush Rim
Knob
Dead
Duplex
Circular Mortise
Padlocks
Screen Door Latches
Vestibule Latches
Secret Gate Latches
Night Latches
Letter Slot Plates
HINGES
Blind and Shutter
Bronze
Bronze Spring
Brass
Brass Spring
Steel
Steel Spring
Full Surface
Full Surface Spring
Half Surface
Half Surface Spring
Pivot—Ball Bearing
Pivot, Ball Bearing, Spring
Spring Pivot—Detachable
Strap and "T"
Floor—Spring
Screen or Storm Sash
BOLTS
Bolts and Nuts

Type of Spanish Stucco Home.

Fire Exit, Panic
Metal Latch
Toggle and Anchor
Expansion
Spring
Wallboard
Expansion Screw Anchors
Brick Bonds
Expansion Shields
Expansion Shells
BUTTS
Steel
Cast
Ball Bearing—Spring
Couplings for Porch Screens and Porch Sash
HANGERS
Adjustable Screen and Storm Sash
Beam Brackets
Parlor or House
Accordion Folding
Sliding—Partition
Basement Window Screen
Adjustable Sash and Screen
Storm Sash
Shutter
Joist
Pipe
Radiator
Wall
Joist Anchors
Shutter Worker
Hinge and Shutter Worker Combined
Shutter Worker and Hanger Combined
Reversible Window Fixtures
Sash Pulleys
Sash Lifts
Sash Operators
Sash Holders
Sash Locks
Sash Weights
Sash Cord
Sash and Transom Chain
Screen and Storm Sash Fasteners
Sash Supporters
Sash Balances—Spring
Sash and Transom Centers
Transom Chains
Transom Hardware
Transom Lifts
Transom Ventilators
Cabinet Door Sets
Casement Window Adjusters
Casement Window Pivot Hinge and Adjuster Combined
Casement Window Sash Lifting Butts
Casement Window Sliding—Folding Adjusters
Casement Window Subsills—Casement or Vertical
Casement Window Subsills—Pivoted, Storm-Proof
Window Catches
Window Locks—Automatic
Check Rail and Ventilator
Casement Window Checks
Cupboard and Transom Catches
Casement Window Fasteners
Cistern Covers
Door Closers
Door Escutcheons
Door Guards
Door Knockers
Door Stops
Door Knobs
Door Latches
Door Pivots—Ball Bearing
Door Pulls
Door Rollers
Door Springs
Kick and Push Plates
Metal Screw Holes
Garment Carriers
Clothes Closet Fixtures
Door Holders
Drawer Pulls
Screen Door Sets
Wall Anchors
Wall Plates
Wall Ties
Wall Plugs
Glazing Points
Joist Anchors
Tee Anchors
Storm Sash Fasteners
Storm Sash Hangers
Tile Hooks
Strap Anchors
Post Bases
Post Caps
Shelf Brackets
Shelf Supports—Adjustable
NAILS
Copper
Wire
Galvanized
Zinc Coated
Cement Coated
Cut
Roofing
Slating
Rods—Copper
Sheet and Rolled Copper
Rivets—Copper
Rivets—Steel

EXTERIOR MILLWORK

Entrances
Storm Vestibules—Wood
Colonnades
Columns, Wood—Lock Joint
Columns—Metal
Pergolas, Posts, Caps and Bases
Capitals—Carved Wood
Capitals—Composition
Trellises
Wood Louvres
Wood Benches
Porch Rails
Porch Spindles
Porch Bases
Shutters

CABINET WORK, FLOORS AND TRIM

FLOORING
Larch
Pine
California White Pine
Spruce
Fir
Oak
Maple
Birch
Beech
Red Gum

For Sources of Supply, See Classified Index, Pages 460 to 496

Private Dwellings—*Continued*

FLOORING—Continued
- Magnesia
- Parquetry
- Pre-Finished Oak
- Canvas
- Cement
- Composition
- Cork Composition
- Fireproof
- Floor Lath
- Bath Room Floor Reinforcement
- Linoleum
- Magnesite
- Sanitary
- Slate
- Rubber Flooring
- Slate Flagging
- Slate Tile

TRIM
- Door and Window
- Metal Doors and Window Casings
- Interior—Hardwood
- Interior Softwoods
- Marble
- Metal
- Slate
- Mouldings—Wool—Outside
- Mouldings—Wood—Inside
- Mouldings—Metal

Cedar Chests
Metal Stairways
Movable Stairways
Disappearing Attic Stairways
Wood Stairways
Suspended Folding Stairways
Millwork—Steel
Newels—Metal
Newels—Wood
Stair Rail Fillets
Stair Treads
Rubber Stair Nosings
Rubber Stair Treads
Veneers
Veneered Panels
Wood Carvings
Ceilings—Wood
Plywood Panels
Mantels—Wood
Bookcases—Wood
Sideboards—Wood
China Closets—Wood
Clothes Closets
Airtight Closets
Aromatic Red Cedar Closets
Mothproof Closets
Picture Moulding
Linen Closets—Wood
Grilles
Glue
Waterproof Glue
Slate Thresholds

ELECTRIC WIRING AND FIXTURES

Bells
Lighting Systems—Electric Generating
Lighting Systems—Carbide
Conductors—Armored
Conduit Boxes
Conduit Box Receptacles
Conduit Fittings
Conduits—Rigid
Conduit, Electrical — Metal Moulding
Conduit, Electrical — Flexible, non-Metallic
Conduits—Underground

WIRE AND CABLES
- Cord—Flexible
- Electric, Rubber Covered
- Flexible Steel Armored
- Cambric Covered—Bell
- Solderless Wire Connectors
- Fixtures

Fixtures—Outdoor
Chandeliers
Hand Forged
All Glass
Indirect Units
- Semi-Indirect Units
- Lamps—Bronze
- Lamps—Iron

Luminaires
Illuminating Glassware
Outlets—Conduit
Outlet Boxes
Fuses, Electric—Indicating
Fuses, Electric—Renewable Cartridge Plug or Link
Fixtures—Wall

ELECTRIC SWITCHES
- Automatic
- Cutout
- Push-Button
- Combination Plates
- Tumbler
- Flush Plates
- Knife
- Snap
- Metal Moulding
- Time Control
- Reciprocating

Wall Plugs—Metal
Expansion Shields
Wall Plugs—Electric Attachment
Wall Boxes

SOCKETS
- Weatherproof
- Porcelain
- Two-Way
- With Chain Pull
- Candelabra
- Receptacles
- Receptacles—Floor
- Receptacles and Indicating Switch

Convenience Outlets
Door Bells and Buzzers
Floor Boxes
Insulating Materials
Bell Ringing Transformers
Radio Aerial
Radio Wiring and Outlets
Transformers
Switch Boxes
Switch Covers

DOOR
- Combination Door Bucks and Metal Trim
- Bucks
- Checks
- Dust Strips
- Frames—Wood
- Gaskets
- Guides, Floor and Weatherstripping Combination
- Guides and Stops

Square Type Brick Home.

- Jambs—Steel
- Kick Plates—Brass
- Frames—Steel

SASH AND DOORS

DOORS
- Hardwood
- Softwood
- Exterior
- Exterior Glazed
- Horizontal Folding
- Interior
- Veneered
- Paneled
- Flush
- Rolling
- Rolling Partitions
- Metal
- Wood and Asbestos
- Metal Covered
- Metal—Cellar
- Screen
- Storm
- Bronze
- Cellar—Metal
- Sliding
- Folding
- Hollow Metal
- Steel Sash Ventilators
- Veneered
- Tin Clad
- Slab Flush Doors

Transoms
Transom Sash—Steel

THRESHOLDS
- Metal
- Slate
- Wood
- Threshold and Weatherstrip Combination

Cellar Sash Frames
Door Frames
Window Casings—Wood
Window Casings—Sheet Metal
Window Frames
Weatherstrips—Wood
Weatherstrips—Metal
Weatherstrips—Fabric
Weatherstrips—Wood and Felt
Window Frames, Cellar—Wood
Window Frames, Cellar—Steel
Window Units, Wood—Double Hung
Window Units, Wood—Box Head and Inset Screen Combination

WINDOWS
- Basement—Steel
- Basement—Wood
- Casement—Steel
- Casement—Solid Nickel—Silver
- Casement—Solid Bronze or Steel
- Casement, Wood
- Cottage—Steel
- Cottage—Wood
- Double Hung
- Dormer and Bay—Steel
- Dormer and Bay—Wood
- Garage Windows—Steel
- Hollow Metal
- Leaded Glass
- Pivoted
- Puttyless
- Reversible, Side or Vertical, Pivoted—Steel
- Reversible, Side or Vertical, Pivoted—Wood
- Pivoted Wood

WINDOW GLASS
- Sheet
- Crystal Sheet
- Chipped Glass
- Ground Glass
- Leaded Glass
- Plate
- Prism Glass
- Art Glass
- Wire Glass

SASH
- Counterbalanced
- Storm
- Steel
- Basement, Wood
- Basement, Steel

Sash Chain—Flat Steel and Steel Wire
Sash Cord

SCREENS
- Casement
- Door and Window—Wood Frame
- Combination Screens and Window Units
- Awnings and Screens, Combined
- Steel Sash, Pivoted
- Roller Window
- Revolving
- Rewirable
- Metal Frame

WIRE CLOTH
- Antique or Golden Bronze
- Pearl
- Galvanized Steel
- Steel, Enameled
- Copper

WEATHERSTRIPS
- Metal
- Wood and Felt
- Rubberized Fabric
- Shutter Workers

Shutters—Wood
Sliding Door Track
Sliding Partition Hangers
Caulking and Glazing Compound
Elastic Glazing Composition

ROOFINGS, INSULATING MATERIALS AND BUILDING PAPERS

Reinforced Concrete Slabs

TILE
- Finials
- Terminals
- French Metal Tile
- Spanish Metal Tile
- Burned
- Cinder Tile
- Clay or Terra Cotta
- Glass Roof Tile
- Vitrified French
- English Shingle
- Straight Barrel Mission
- Spanish

For Sources of Supply, See Classified Index, Pages 460 to 496

Private Dwellings—*Continued*

Gypsum
Cement (Colored)
Coping
Tile Hooks
Roofing Slates
Roofing Slates—Inlaid Units
SHINGLES
Red Cedar
White Cedar
Cypress
Redwood
Hemlock
Stained or Dipped
Asphalt—Rock Surfaced
Asphalt—Blended Colors
Twin
Giant Twin
Four-In-One
Asbestos Cement
Asbestos Asphalt
Copper
Zinc
Metal
Terne Plate, Galvanized
Slate, Inlaid
Strip
ROOF COVERINGS
Ready Roll—Plain
Ready Roll—Rock Surfaced
Asphalt Felt for Built-Up Roof
Asphalt Paint
Built-Up Roofing
Tar Felt for Built-Up Roof
Asbestos-Asphalt Composition
Canvas
Rubber Roofing
Saturated Canvas
Steel
Thatched
Terne Plates
Terne Plates — Galvanized
Copper Sheets
Zinc
Sheet Metal — Corrosion Resisting
Sheet Metal—Galvanized
Tin
Reinforced Gypsum Slabs
Sheet Metal Cornices
Sheet Metal Ornaments
Zinc Ornaments
Roof Boards—Wood Strips
Sound Deadeners (See INSULATION)
Gypsum Partition and Furring Tile
Roof Cement
Roof Putty
Roof Paint
Roofing Fasteners
Roofing Nails
Siding and Shingle Clips
Ridging—Ventilated
ROOFING NAILS
Slating
Zinc Coated
Pure Zinc
Pure Copper
Cut Iron
Galvanized
Cement Coated
Drip Edge
Roof Flanges—Lead
Snow Guards—Roof
ROOF GUTTERS
Wood
Copper
Zinc
Galvanized Steel
Roof Trimmings
EAVES TROUGH
Galvanized
Zinc Copper
Eaves Trough Hangers
Eaves Trough Outlets
Elbows
Miters—Copper
METAL ROOF TRIMMINGS
Ridge Roll Finials
Corrugated Ridges
Cresting Blocks
CONDUCTOR PIPE
Wood
Lead
Sheet Metal
Galvanized
Copper
Zinc
INSULATION (HEAT)
Caulking Cement
Cork Board
Asbestos Paper
Asbestos Board
Asbestos Corrugated Board
Asbestos, Felted
Asbestos Pipe Covering
Felted Flax Straw Fiber
Felted Flax Straw Fiber, covered with 1/16-inch asbestos, each side
Felted Flax Straw Fiber, covered on one side with waterproof paper and beveled wood lath
Fibre Board
Gypsum Concrete
Gypsum and Fibre Board Combined
Red Building Paper
Insulating Lumber
Insulating Paper
Black Building Paper (waterproof)
Asphalt Saturated Craft Paper Reinforced with Sisal Fibre
Sea Grass, matted, stitched between layers of craft paper
Wood Pulp Board Plaster Base
Cane Fiber Board
Rye Straw Board
Hair sewed between two layers of paper
Magnesia Pipe Covering
Magnesia Pipe Covering—Air Celled
Paper Pulp Board, keyed for plaster base
Beveled Lath mounted on chemically treated cardboard
Plaster and Paper in alternate layers
Flax Straw Fiber stitched between layers of craft paper
Wood Fiber between two layers of craft paper
Mineral Wool

Shingle Type Dutch Colonial.

Deadening Boards
Hair
Mineral Wool
Deadening Felt
Asphalt Saturated Paper
Tar Paper
Asphalt Felt
Tarred Felt

HEATERS AND HEATING DEVICES

Ash Dumps
Ash Pit Doors
Gas Heaters
Grates
Grates—Air
Laundry Stoves
Oil Burners—Gravity Feed
Oil Burners—Power Blast
Oil-Gas Burners
Electric Heaters
Cabinet Heaters—Warm Air
Cabinet Heaters—Hot Water
WARM AIR FURNACES
Gas Fired
Pipe and Fittings
Pipeless
Combination Forced Air—Gravity System
Registers, Warm Air—Floor
Registers, Warm Air—Wall
Registers—Cold Air
Hot Water Combination
Cold Air Pipe
Smoke Pipe
HEATING BOILERS
Steam
Hot Water
Cabinet Hot Water Heaters
Hot Water and Hot Air Combination
Steam and Hot Air Combination
Heating Systems—Vacuum, Vapor and Modulation
Expansion Tanks
Pipe—Steam and Hot Water
Pipe—Galvanized
Pipe—Furnace
Smoke Pipe
RADIATORS
Cast
Pressed Steel
Gas—Steam
Gas—Water
Bottoms
Covers
VALVES
Radiator—Standard
Quarter-Turn
Packless
Graduated or Modulation
Vacuum, Air Vent
Vapor Regulators
Radiator, Return Line
Air Vent, Automatic
Air Line Return
Relief, Air, Gas or Water
Thermostatic
Compressor, Air—Thermostat
Ejectors—Air
Tanks—Oil
Tanks—Steel
Tanks—Iron
Traps—Radiator
Traps, Radiator—Thermostatic
Traps, Radiator — Vacuum
Separators—Air
Thermostats
Controllers—Damper
Controllers—Draft
Draft Regulators—Automatic
MOTORS
Electric Damper Regulator
Gravity Thermostat
Spring Thermostat
Damper Regulator and Indicator—Air Duct
Ceiling Plates
Adjustable Floor Plates
Radiator Hangers
Floor Registers
Wall Registers
Expansion Shields
Heating and Ventilating Registers
Ventilating Grilles—Hot Air
Ventilating Systems
Sheet Metal — Asbestos Covered
Ash Receivers—Rotary, Under-floor
Ash Receivers—Stationary Under-floor
Cleanout Doors
RADIATOR COVERS
Temperature Controlling
Adjustable
Art Metal
Chimney Caps
Chimney Thimbles—Adjustable
Chimney Ventilators
Cast Iron Cleanout
Flue Lining
Smoke Jacks
WATER HEATERS
Steam Storage
Gas—Tank or Boiler
Storage—Multicoil Gas
Gas—Instantaneous, Automatic
Gas—Automatic Storage
Combination Garbage Burning and Hot Water Supply
Combination Gas and Garbage Burning
Combination Oil and Garbage Burning
Temperature Gages
Pressure Gages
Water Gages
COVERINGS—PIPE AND BOILER
Magnesia
Asbestos

For Sources of Supply, See Classified Index, Pages 460 to 496

Private Dwellings—*Continued*

Composition
Asbestos Paper
FIREPLACES AND MANTELS
Ash Dumps
Brick
Mantels—Wood
Ceramic Tile
Dampers
Decorative and Faience Tile
Tile—Mat Glazed
Furnishings
Grates
Marble
Artificial Marble
Slate
Gypsum Plaster
Throat Dampers
Logs, Gas
Logs, Radiant Electric
Fire Baskets
Andirons

KITCHEN EQUIPMENT

Breakfast Nooks
Ranges, Gas
Ranges, Electric
Ranges, Oil
Ranges—Coal
Oil Range Regulators
Oven Regulators
Cabinets, Kitchen, Steel
Cabinets, Kitchen, Wood
Dishwashers—Electric
Dishwashers—Hydraulic
Electric Fans
Ironing Boards—Built-In
Kitchen Cabinet Hardware
Kitchenettes, Steel, Built-in
Kitchen Interior Trim
Wall Cabinets, Steel, Built-in
REFRIGERATORS
For Outside Icing
Iceless
Automatic—Electrical
Automatic—Gas
Ice Chests
Refrigerator Drip Drains
Refrigerator Traps
Ironing Boards, Portable Stand
Package Receivers
SINKS
Combination dish-washers and Sink
Copper and White Metal
Porcelain
Reinforced Concrete
Sheet Steel
Soapstone
Drainboards, White Metal, Copper, etc.
Garbage Receivers, Metal

PAINTING, DECORATING AND GLAZING

PAINT
Carbon
Oil—Interior and Exterior
Mill White
Zinc Oxide in Linseed Oil
Metal Protective
Cold Water
Flat Wall Finish
Calcimine
Enamels
White Lead
Red Lead
Colors, Fresco
STAINS
Acid
Oil
Shingle
Spirit
Water
Shellac and Substitutes
Lacquers
Fillers, Wood—Paste
Fillers, Wood—Liquid
VARNISH
Interior and Exterior
Floor
Spar
Architectural
Oil, Wood Floor
Putty
Steel Sash and Casement Putty
Wax, Floor
Wax, Varnish
Muslin, Ceiling or Wall
Burlaps, Dyed Tapestry
Floor Finish
Calcimine
Architectural Enamel
Paint and Varnish Remover
Wall Coverings, Washable
Wallpaper Stain Removers
Wall Tints
Wall Finish
Cement Coating
Ornamental Plastering on Metal Lath
Wood Preservatives
Zinc Paint Pastes

PLUMBING, PIPE FITTING, BATH ROOM AND LAUNDRY FIXTURES

Bath Tubs, Metal—Enameled
BATHS
Built-in
Foot
Shower or Needle
Sitz
Shower Bath Receptors
Faucets
Fountains—Bubbling
Bath Tub Fittings
Lavatories—Built-In
Lavatories, Metal, Enameled
Expansion Shields
Bathroom Stools
Bath Room Accessories
Mixers, Shower Bath
Shelving, Bath Room—White Glass
Traps, Bath
Traps, Refrigerator
Traps—Laundry
Grab Rails, Bath Room
Closets, Water
Closets, Water Flush Valve
Valves—Float or Tank
Closet Seats, Wood
Closet Seats, Composition
Sewage Disposal Plants
Sewer Pipe
Sewer Tile
Sewer Pipe Strainers
Sewer Tile Jointing Compound
Toilet Systems, Chemical
Toilet Fittings
Cabinets, Medicine—Wood
Cabinets, Medicine—Metal
Lifts—Water
Plumbers' Brass Goods
Plumbers' Lead Goods
Valves, Flushing, Closet or Urinal
Faucets, Brass, Nickel Plated
Boiler Stands
COCKS AND BIBBS
Bibb Washers
Self Closing
Quick Opening
Compression
Fuller Balls
Cocks, Mixing
Cocks, Stop and Waste—Ground Key
Kitchen Sinks Drainboards
Water Softening Devices
Strainers, Floor Drain
Laundry Tubs
Tubs and Sinks, Combination
Plates, Floor and Ceiling
Receptors—Shower Bath
PIPE
Brass
Wrought Iron
Steel, Lap or Butt
Nickled
Cast Iron Soil
Sewer, Vitrified Clay
Pipe Fittings
Pipe Hangers
Pipe Railing
PUMPS
Hand Lift
Hand Force
Combination Lift and Force
Combination Air and Water Systems
Electric Driven
Hydraulic Driven and Pressure Tank Systems
Automatic Drainage
Automatic House or Tank
Switches — Automatic Electric
Well Pumps—Deep
Well Pumps—Shallow
Water Closets
Closet Bowls
TANKS
Closet
Pneumatic Water
Septic
Steel and Iron
Wood
Water Softeners
Water Supply Systems—Hydro-Pneumatic
Water Supply Systems—Non-Storage
Gasoline Engines
Electric Motors
Vent Connections, Roof
Force Pumps
House Pumps
Tank Balls
Motor Driven Pumps
Washers, Bibb

MISCELLANEOUS

Awning Cord
Awning Rope—Cotton
Awning Stripes
Brass Rods
Catch Basins
Clothes Dryers, Gas
Chutes, Coal
Cellar Drainers, Automatic
Cellar Hoists
Floor Drains
Drain Tile, Clay
Cut-Offs, Rain Water
Expansion Shields
Filters—Water
Linings, Chimney and Flue
Metal Letters and Numbe
Flag Poles
Metal Letters and Numbers
Package Receivers
Putty
Putty for Steel Sash and Casements
Garbage Receivers, Built-in
Rubbish Burners—Built-in
Garbage Incinerators
Hoists, Ash—Cellar Window
Elevators, Automatic Passenger
Elevator Enclosures
Elevator Fixtures
Disappearing or Sliding Stairways
Dumbwaiters
Dumbwaiters, Electric
Dumbwaiter Rope
Valves, Hose
Ventilators
Wall Safes
Flue Thimbles, Cast Iron
Flue Thimbles, Terra Cotta
Chimney Thimbles—Galvanized, Adjustable
Chimney Caps and Tops—Sheet Metal
Shelving—Steel
Weather Vanes—Electric Indicating
Letters and Numbers—Metal
Linoleum
Rugs—Linoleum
BLINDS
Sliding
Rolling
Venetian
Awning
Bases, Porch Column—Cast Iron
Awnings, Canvas
Shades—Window
Shade Rollers
Porch Floor Reinforcing
Roof Drains
FURNITURE
Built In
Garden and Park—Stone, Cement, Composition
Wood
Metal
Terra Cotta
Coat Hooks
Disappearing Beds
Dressing Room Cabinets
Roller Beds
Wall Beds
Household Electric Appliances
Safety Gate Hooks
Meter Boxes
Mirrors—Plate Glass
Clocks
Garment Hangers and Hooks
Lightning Rods
Mail Boxes
Manhole Covers
BRICK
Retaining Walls
Walks
Garden Walls
Cisterns
Pergolas
Wells
Gates—Iron or Bronze
Gates—Folding
Gates—Sliding
Grilles—Steel and Wire
Trellises, Iron and Wire
Trellises—Wood
Telephone Cabinets—Built-in
Fountains, Display and Lawn
Lightning Rods
Lighting Systems—Electric
Arbors, Wood
Arches, Corrugated
Arches, Driveway
COVERS
Cistern
Coalhole
Manhole
Sidewalk Black
Skylights
Skylight Guards
Sun Dials
Concrete Fence Posts
Fencing, Ornamental Iron and Steel
Fencing, Wire
Fencing—Lattice
Gates, Metal
Gates, Wood
Filters
GRATINGS
Iron
Steel
Wire
Grilles, Steel and Wire
Clothes Posts
Fence Posts
Post Bases—Fence
Post Caps—Fence
Window Ventilators
Railings—Iron
Roof Ventilators
Roof Windows—Steel
Swimming Pool Tile and Equipment
Metal Chimney Draft Extensions
Metal Building Corners
Washstands

PRIVATE GARAGES

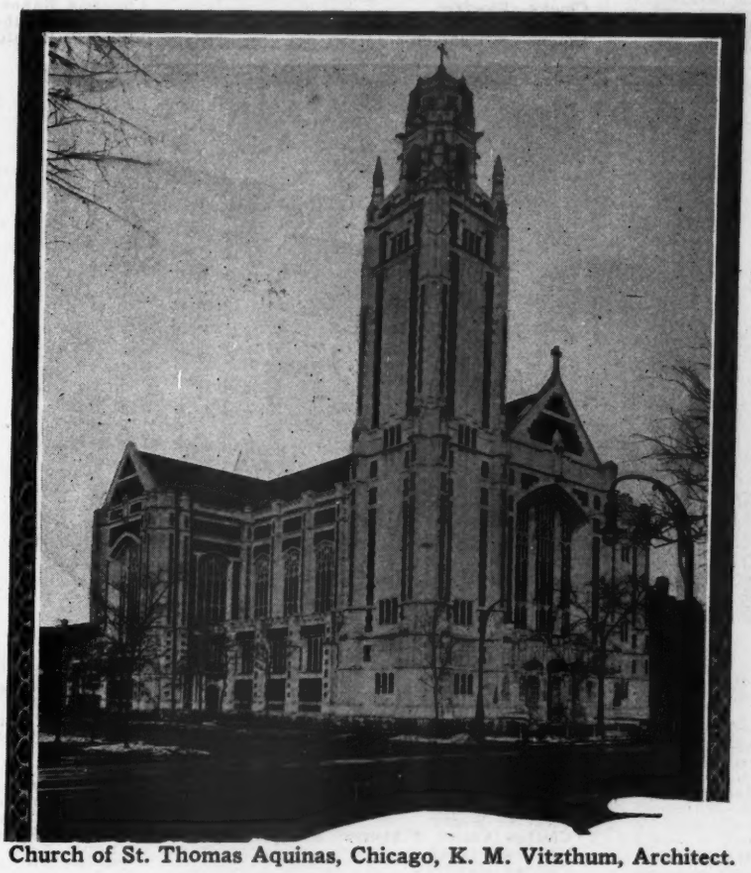
DOORS
Plain
Glazed
Folding
Sliding
Sliding—Folding
Wood
DOOR
Bumpers
Holders
Bolts
Tracks
Hangers
Hasps
Hinges
Latches
Locks
Openers
Electric Wiring
Electric Lights
Electric Switches
Power Outlets
HEATERS
Cabinet—Hot Air
Cabinet—Hot Water
Gas—Steam Radiators
Coal Fired Boilers
Gas Fired Heaters
Oil Fired Heaters
Radiation from House Plant
Rail Brackets
Steel Windows
Wood Sash
Tanks—Oil
Tanks—Gas
Pumps—Gasoline
Sliding Door Track
Turntable
Water Supply Pipe
Water Cocks
Hose Connections
Work Bench
Cabinets for Tools and Supplies
Ventilators
Portable Garages
Metal
Wood Panel

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings

Apartment Buildings, Hotels, Office Buildings, Schools and Colleges, Theaters, Banks, Libraries, Hospitals, Institutions, Churches, Memorials, State and Public Buildings, Factories and Industrial Buildings, Garages and Service Stations, Stores, Warehouses and All Steel Frame, Reinforced Concrete and Mill Construction Buildings

Acid Resistance for Concrete
Acoustical Correction Material
Accordion Door Hangers
Aerial Tramways
Accounting Systems for Contractors
Air Pumps
Air Washers
Air Dryers
Air Tanks
Air Filters
Adjusting Frames
Air Brushes
Air Compressors
Air Grates
Air Painting Equipment
Altar Rails
Alarms—Burglar
Alarms—Fire
Alarms—Sprinkler System
Alarms—Watchman
Alundum Tile
Alumina Cement
Ammonia System Fittings
Ammeters
Annunciators
Anchor Bolts
Anenometers
Angle Irons
Anti-Fouling Paint
Anti-Freeze Compounds
Apartment House Furnishings
Arbors, Wood and Iron
Arbor Presses
Arc Lamps
Architectural Home Study Courses
Architectural Iron Work
Architectural Service
Area Grates
Armored Cable
Armored Conductors
Art Gum
Art Glass—Window
Artesian Wells
Artificial Marble
Asbestos Board
Asbestos Cement
Asbestos Curtains
Asbestos Flooring
Asbestos Lumber
Asbestos Paper
Asbestos Plaster
Asbestos Roofing
Asbestos Sheathing
Asbestos Shingles
Asbestos Wall Board
Asbestos Wood
Asbestos Wood Ceilings
Asbestos Wood Partitions
Ash Cans
Ash Chute
Ash Dumps
Ash Handling Machinery
Ash Receivers
Asphalt Cement
Ash Pit Doors
Asphalt Felt
Asphalt Felt—Saturated
Asphalt Paint
Asphalt Roofing—Ready
Asphalt Roofing—Built-Up
Asphalt Shingles
Attachment Plugs
Auditorium Seats
Austral Windows
Auto Truck Mixers
Automatic Furnaces
Automatic Sprinklers
Automatic Water Heaters
Automobile Turn Tables
Automobile Insurance
Automobiles—Passenger
Automobile Trucks
Automobile Washers
Awnings—Cotton
Awnings—Duck
Awning Cord
Awning Equipment
Awning Stripes
Awning Rope—Cotton
Backing—Stone
Backing—Brick
Backing—Tile
Bakery Equipment
Bakery Ovens
Ball Bearing Sheaves
Bank Equipment
Bank Screens
Barber Shop Equipment
Basins
Basins—Blowoff
Basins—Gravel
Basins—Pump
Base Bead
Base Screens
Basement Sash
Bathroom Accessories
Bathroom Cabinets



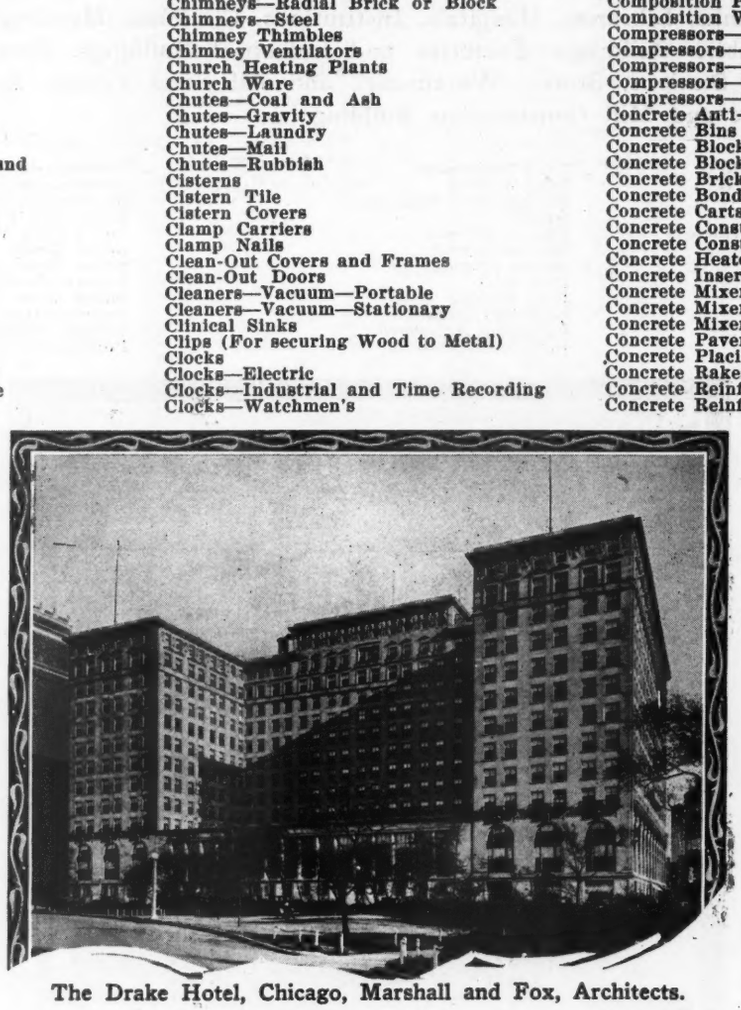
Church of St. Thomas Aquinas, Chicago, K. M. Vitzthum, Architect.

Bathroom Fixtures
Bathroom Interior Trim
Bathroom Mirrors
Bathroom Outfits
Bathroom Partitions
Bathroom Scales
Bathroom Stools
Bathroom Walls—Ceiling—Wainscoting
Bath Traps
Bath Tubs
Battery Charging Outfit
Beam Wire Wrapping (Fireproofing)
Beds
Bells—Electric
Bells—Tower
Belting
Belt Conveyors
Bibb Washers
Blackboards—Artificial
Blackboard—Slate
Bin Gates
Blast Furnaces
Blended Shingles
Blinds—Rolling
Blinds—Sliding
Blinds—Venetian
Blind and Shutter Hangers
Blue Print Machines
Blue Print Paper
Blowers—Fan
Blowers—Pressure
Blowers—Rotary
Blowers—Soot
Blowers—Steam Jet
Boiler and Pipe Covering
Boiler Feed Water Treatment
Boiler Brick Setting
Boiler Covering
Boilers—Down Draft
Boiler Feed Pumps
Boilers—Arch
Boilers—Firebox
Boilers—Fire Tube
Boilers—Fire and Water Tube
Boilers—Greenhouse
Boilers—Hot Water Heat
Boilers—Steam Heating
Boilers—Power Plant
Boilers—Heating
Boilers—Cement
Boilers—Sectional
Boilers—Smoke Consuming
Boilers—Steam
Boilers—Tubular
Boilers—Water Tube
Boiler Stands
Bolts and Nuts
Bowling Alleys
Branding Irons
Brass Plumbing Pipe
Brass Railings
Brass Rods
Brass Sheets
Brass and Copper Tubing
Brazed Tubing
Breakfast Nooks
Breakfast Room Sets
Breakfast Room Sets—Folding
Brick Bonds
Brick Clamps
Brick Colors
Brick Mantels
Brick Mortars
Brick Waterproofing
Brick—Common
Brick—Enameled
Brick—Face
Brick—Fire
Brick—Rough Texture
Brick—Hollow
Brick—Insulating
Brick—Paving
Brick—Terra Cotta
Brick—Paint
Brine Coolers
Bronze Accessories
Bronze Doors
Bronze Gates
Bronze Ornaments
Bronze Paint
Bronze Railings
Bronze Sheet
Building Anchors
Building Books
Building Directories
Building Paper
Building Plans
Building Stone
Building Tile
Built-In Bathroom Fixtures
Built-In Baths
Built-In Furniture
Built-In Ironing Boards
Built-In Ironing Machines—Gas—Electric
Built-In Cabinets
Built-In Lockers
Built-In Refrigerators
Bulletin Boards—Cork
Bubbling Fountains
Built-Up Roofing
Burners—Oil, Gravity
Burners—Oil Power Blast
Butt Gauges
Butt Hinges
Buzzer Stations
Cabinet Door Sets
Cabinet Heaters
Cabinets—Bathroom
Cabinets—Built-In
Cabinets—Chart
Cabinets—China
Cabinets—Dresser
Cabinets—Dressing and Drug
Cabinets—Hose
Cabinets—Instrument
Cabinets—Kitchen—Steel

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Cabinets—Kitchen—Wood
Cabinets—Laboratory
Cabinets—Linen
Cabinets—Medicine—Steel
Cabinets—Medicine—Wood
Cabinets—Towel
Cabinets—Utensil
Cable Terminals
Cafeteria Equipment
Calcimines
Calcium Chloride
Caliper Rules
Calipers
Calking and Glazing Compound
Call System
Candelabra Sockets
Canvas—Untreated
Canvas—Waterproof
Canvas Flooring
Canvas Roofing
Car Loaders
Carpets
Cars—Dump
Cars—Industrial Railway
Cars—Motor
Casement Windows
Casement Window Fasteners
Casement Window Hardware
Casement Windows—Steel
Casement Windows—Wood
Casings—Door
Casings—Window
Cash Carriers
Cast Cement—Portland
Cast Iron Columns
Castings—Iron
Castings—Iron—Galvanized
Catch Basin Forms
Catch Basins
Cedar Chests
Cedar Closets
Ceiling Fans
Ceiling Pulleys
Ceilings—Composition
Ceilings—Metal
Ceilings—Plaster Board
Ceilings—Tile
Cellar Doors—Metal
Cellar Drainers
Cellar Hoists
Cellar Sash Frames—Steel
Cellar Sash Frames—Wood
Cellar Wall Grates
Cellar Windows—Steel
Cellar Windows—Wood
Cellar Window Sets
Celluloid Paint
Cement Accelerators
Cement—Acid-Proof
Cement—Asbestos
Cement—Boiler Wall
Cement—Boiler Setting
Cement—Bond
Cement—Bricklayers
Cement Brick Machines
Cement Brick Moulds
Cement—Caen
Cement—Boiler
Cement—Coatings
Cement Colors
Cement Fillers
Cement Fire Brick
Cement Fire Clay
Cement Floor
Cement Floor Finish
Cement Grouters
Cement Gun
Cement—Gypsum
Cement Hardeners
Cement—Insulating
Cement—Keene's
Cement—Limestone
Cement—Linoleum
Cement—Magnesia
Cement Markers
Cement—Portland
Cement Paint
Cement Roofing
Cement Roofing—Asbestos (Plastic)
Cement Roofing Tile
Cement Stains
Cement—Tile
Cement—Testing
Cement Wall Plaster
Cement—White
Chain Blocks
Chain Clamps
Chain Grate Stokers
Chain Hoists
Chairs—Amphitheater
Chalk Lines
Chalk Rail
Chandeliers
Chemical Closets
Chemical Water Softeners
Chimes—Bells
Chimes—Tubular
Chimneys—Brick
Chimney Caps and Tops
Chimneys—Concrete Reinforced
Chimney Molds—Cement
Chimneys—Radial Brick or Block
Chimneys—Steel
Chimney Thimbles
Chimney Ventilators
Church Heating Plants
Church Ware
Chutes—Coal and Ash
Chutes—Gravity
Chutes—Laundry
Chutes—Mail
Chutes—Rubbish
Cisterns
Cistern Tile
Cistern Covers
Clamp Carriers
Clamp Nails
Clean-Out Covers and Frames
Clean-Out Doors
Cleaners—Vacuum—Portable
Cleaners—Vacuum—Stationary
Clinical Sinks
Clips (For securing Wood to Metal)
Clocks
Clocks—Electric
Clocks—Industrial and Time Recording
Clocks—Watchmen's



The Drake Hotel, Chicago, Marshall and Fox, Architects.

Clocks—Employees Time
Clocks—Master
Clocks—Pneumatic
Clocks—Tower
Closet Bowls
Closet Cleaners
Closet Lining—Cedar
Closet Seats
Closet Tanks
Closets—Chemical
Closets—Water
Clothes Closet Fixtures
Clothes Dryers
Clothes Hangers
Clothes Line
Clothes Lockers
Clothes Posts
Clothes Vaults—Air Tight
Coal Chutes
Coal and Ash Handling Machinery
Coal Cleaners and Crushers
Coal Hole Covers
Coal Pocket Machinery
Coal Stations
Coat Hooks
Cold Storage Room Doors
Cold Storage Door Gaskets
Cold Storage Insulation
Cold Storage Plants
Cold Storage Rooms
Coke Oven Machinery
Collectors—Dust
Colonnades
Coloring—Cement
Coloring—Mortar
Coloring—Plaster
Column Bases
Column Clamps
Column Molds—Cement
Column Stancions
Columns—Architectural
Columns—Cement
Columns—Sheet Metal
Columns—Wood
Combination Plates
Combination Screen and Storm Doors
Common Brick
Composition Flooring
Composition Ornaments
Composition Partitions
Composition Wainscoting
Compressors—Air
Compressors—Ammonia
Compressors—Gas
Compressors—Thermostat
Compressors—Turbine
Concrete Anti-Freezing Compound
Concrete Bins
Concrete Block Machinery
Concrete Block Molds
Concrete Brick Molds
Concrete Bond
Concrete Carts
Concrete Construction Clamps
Concrete Construction Forms
Concrete Heaters
Concrete Inserts
Concrete Mixers—Base
Concrete Mixers—Continuous
Concrete Mixers on Auto Truck
Concrete Pavers
Concrete Placing Towers
Concrete Rakes
Concrete Reinforcing Bars
Concrete Reinforcing Column Spirals
Concrete Reinforcing—Expanded Metal
Concrete Reinforcing Fabric
Concrete Reinforcing Steel Plate
Concrete Slabs—Reinforced
Concrete Surfacers
Concrete Screen Supports
Concrete Contraction Joints
Concrete Spouting
Conduit—Black
Conduit—Boxes
Conduit Box Receptacles
Conduit Clamps
Conduit—Fibre
Conduit Fittings
Conduit—Galvanized
Condensers—Ammonia
Condensers—Barometric
Condensers—Jet
Condensers—Surface
Controllers—Automatic
Controllers—Electric
Controllers—Feed water
Controllers—Heat
Control Locks
Convenience Outlets
Conveyors—Coal
Conveyors—Gravity
Conveyors—Power
Conveying Machinery
Converters—Synchronous
Cooking Utensils
Cook Stoves—Coal
Cook Stoves—Oil
Coolers—Air
Coolers—Brine
Coolers—Water
Cooling Plant
Cooling Systems—Spray
Copper Alloy Sheets
Copper Lined Piping
Copper Conductor Pipe
Copper Covered Doors
Copper Elbows
Copper Miters
Copper Nails
Copper Plumbing Pipe
Copper Rivets
Copper Rods
Copper—Sheet and Roll
Copper Sheets
Copper Shingles
Cork Carpets
Cork Composition Flooring
Cork—Granulated
Cork Sheets
Cork Tile
Corner Braces
Corrugated Arches
Corrugated Sheets
Counter Balanced Stairs
Cottage Windows—Steel
Cottage Windows—Wood
Cotton Duck
Counter Fronts—Wood
Counter and Table Tops
Cove Base—Composition
Cove Base—Cork
Cove Base—Cork Composition
Cove Base Machines—Electric
Cove Base—Metal
Cove Base—Quarry Tile
Cove Base—Rubber
Cove Base—Slate
Cove Base—Terrazzo
Cove Base—Tile
Coverings—Pipe—Asbestos
Coverings—Pipe—Metal

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Covers—Cast Iron Man Hole
Covers—Cast Iron Coal Hole
Covers—Sidewalk
Covers—Vault
Creosoted Poles and Posts
Creosoted Lumber
Cresting Blocks
Crushers and Pulverizers
Cubicals—Steel and Glass
Curb and Gutter Forms
Curbing Granite
Current Taps
Curtains—Fireproof
Curtains—Shower Bath
Cuspidors
Cut-Outs
Dairy Plant Equipment
Damper Regulators
Damp-Proofing Paint
Damp Proofing—Stone
Damp Proofing Wall Covering
Dark Room Shades
Decorated Leather
Deadening Boards
Deadening Felt
Decorative Tile
Deflectors—Heat
Dentist Office Equipment
Dimension Stock—Lumber
Directories—Building
Dirt Scrapers
Dish Washers
Disinfectors
Disappearing Beds
Disappearing Stairs
Display Cases
Dome Construction—Glass
Dome Construction—Tile Vault
Door Beds
Door Bells
Door Bucks
Door Bumpers
Door Butts and Hinges
Door Casings
Door Checks
Door Clamps
Door Closers
Door Guards
Door Handles
Door Hardware
Door Hardware—Elevator
Door and Window Dust Strips
Door and Window Screens
Door Frames—Steel
Door Frames—Wood
Door Gaskets
Door Hangers
Door Holders
Door Jambs
Door Knobs
Door Knockers
Door Hardware—Locks
Door Hardware—Locks—Electric
Door Hardware—Name Plates
Door Hardware—Push Bars
Door Hardware—Special Hospital Doors
Door Openers
Door Panels
Door Plates
Door Pulls
Door Springs
Door Switches
Door and Window Trim
Doors—Automatically Controlled
Doors—Bronze
Doors—Cold Storage Room
Doors—Corrugated
Doors—Counter Balanced
Doors—Dumbwaiter
Doors—Fireproof
Doors—Fire Tin Clad
Doors—Flush Veneered
Doors—Freight Elevator
Doors—Garage
Doors—Hollow Steel
Doors—Horizontal Folding
Doors—Kalamein
Doors—Overhead Trolley
Doors—Passenger Elevator
Doors—Pivot, Ball Bearing
Doors—Receiving
Doors—Refrigerator
Doors—Revolving
Doors—Revolving Freezer
Doors—Rolling Steel
Doors—Rolling Steel—Motor Operated
Doors—Screen
Doors—Sheet Steel
Doors—Shipping
Doors—Showcase
Doors—Sidewalk
Doors—Soundproof
Doors—Telephone Booth
Doors—Telescoping
Doors—Toilet Room Partition
Doors—Tubular Steel
Doors—Vault
Doors—Vanishing
Doors—Veneered
Doors—Warehouse
Doors—Wood—Rolling
Doors—Wood—Sliding
Doors—Wire
Double Hung Windows
Double Hung Windows—Solid Copper
Double Hung Windows—Nickel—Silver
Down Spout Heads
Down Spouts
Down Spouts—Copper
Down Spouts—Galvanized
Down Spouts—Lead
Down Spouts—Zinc
Drafting Pencils
Drafting Room Furniture
Draftmen's Scales
Drafting Tables
Drainage Fittings
Drainage Sewer Specialties
Drain Boards
Drain Flushers
Drain Tile
Drain Pumps
Drain Tile—Clay
Drain Tile—Machines
Drain Tile Molds—Cement
Drains—Areaway
Drains—Cellar
Drains—Cellar—Automatic

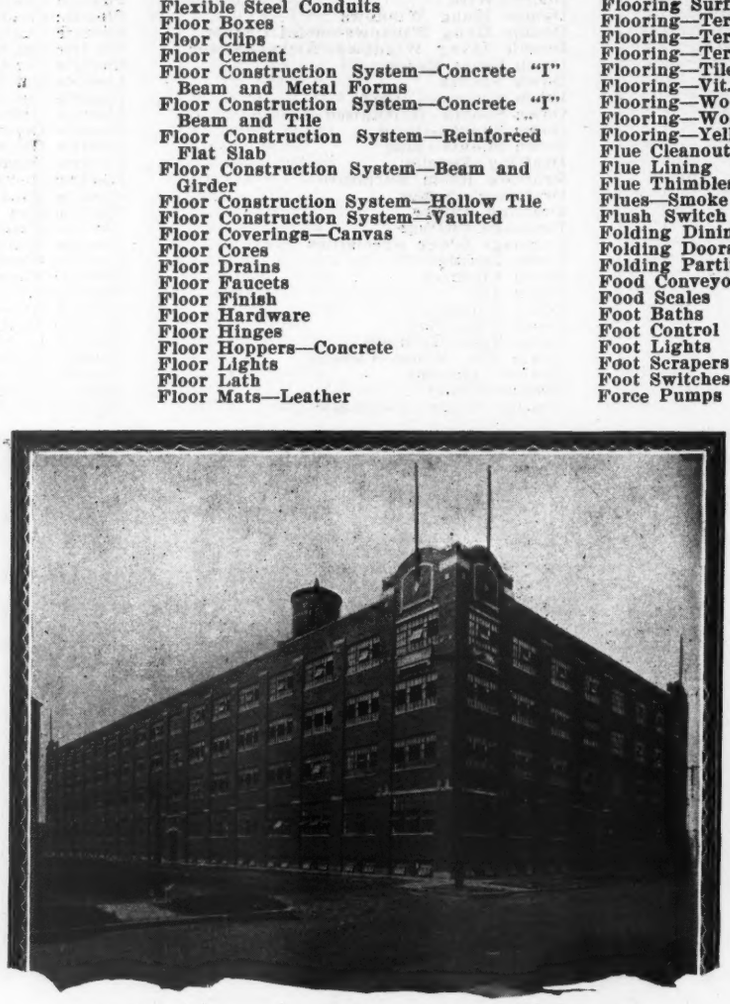
The Birchwood Beach Apartment Building, Chicago.

Drains—Stair
Drains—Floor
Drains—Garage
Drains—Refrigerator
Drains—Roadway
Drains—Roof
Drains—Shower
Drains—Swimmingpool
Drains—Yard
Drawing Boards
Drawing Inks
Drawing Instruments
Drawing Paper
Drawer Slides
Drawn Metal Work
Dressing Room Cabinets
Dressing Tables—Built-In
Drinking Fountains
Drinking Water Cooling System
Drip-Edge Roofing
Driveway Arches
Dry Cleaner Apparatus
Dryers—Clothes
Dryers—Plaster
Dumb Waiter Cord
Dumb Waiter Doors
Dumb Waiter Rope
Dumb Waiters—Electric
Dumb Waiters—Hand Power
Dumb Waiters—Hydraulic
Dump Carts
Dump Doors
Dump Wagons
Dust Collectors
Dynamos
Dynamometers
Eaves Trough
Eaves Trough Hangers
Eaves Trough Outlets
Ecclesiastical Ware
Economizer—Fuel
Efflorescence Removers
Electric Aisle Lighting
Electric Appliances
Electric Circuit Breakers
Electric Conduits—Flexible
Electric Conduits—Non-Metallic
Electric Conduits—Rigid
Electric Conduit Fittings
Electric Conduletes
Electric Controls
Electric Cut-Outs
Electric Cut-Out Boxes
Electric Cut-Out Cabinets
Electric Cut-Out Switches
Electric Diffusers
Electric Door Locks
Electric Door Openers
Electric Dumb Waiters
Electric Elevators
Electric Fans
Electric Fan Brackets
Electric Fuses
Electric Fixture Fittings
Electric Floor Boxes
Electric Floor Box Outlets
Electric Generators
Electric Glue Pots
Electric Heaters
Electric Light Bulbs
Electric Light Lamps
Electric Pumps
Electric Lighting Plants
Electric Motors
Electric Panel Board Boxes
Electric Panel Boards and Cab
Electric Push Buttons
Electric Radiators
Electric Ranges
Electrical Receptacles and Sockets
Electric Signs
Electric Supply Boxes
Electric Switches
Electric Switches—Automatic
Electric Transformers
Electric Wiring Fittings
Electric Wiring Supplies
Electric Wire Mold
Electric Wire Mold Fittings
Ejectors—Air
Ejectors—Hydraulic—Automatic
Ejectors—Sewage
Elevated Tanks—Wood
Elevating Machinery
Elevator Annunciators
Elevators—Bucket
Elevator Car Locks—Automatic
Elevator Cars
Elevator Doors
Elevator Door Locks
Elevator Door Closers
Elevator Door Hangers
Elevator Door Illuminating Thresholds
Elevator Door Opening and Closing Devices
Elevator Door Openings
Elevator Door Operators
Elevator Door Thresholds
Elevators—Automatic Push Button
Elevators—Automobile Carriage
Elevators—Belt Driven
Elevator Enclosures
Elevator Express Call System
Elevator Fixtures
Elevator Gages
Elevator Gates
Elevator Safety Appliances
Elevator Signals
Elevators—Electric
Elevators—Hand Power
Elevators—Hydraulic
Elevators—Ice
Elevators—Invalid
Elevators—Plunger
Elevators—Sidewalk
Elevators—Steam
Elevators—Traction
Elevators—Tray
Eliminators—Air
Emery Cloth
Enamels—Architects
Enameled Brick
Enameled Metal Tile
Enclosed Fuses
Engines—Gasoline
Engines—Steam
Engines—Turbine
Engines—Vacuum
Entrance—Interior Trim
Entrances—Ceramic Tile
Escalators
Estimating and Plan Reading Courses
Estimating Data Books
Exciters—Electric
Exhauster—Air
Exhaust Heads

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Exit Locks
Expanded Metal
Expanded Metal Lath
Expanded Metal Lath Bolts
Expansion Bolts
Expansion Joints—Terrazzo
Expansion Shelves
Expansion Shields
Expansion Screw Anchors
Extension Rules
Extruded Metals
Fabric—Decorative
Fabricated Steel
Face Brick
Factory Flooring
Factory Sinks
Factory Trucks
Faience
Fan Hangers
Fans—Ceiling
Fans—Electric
Fans—Exhaust
Fans—Portable Electric
Fans—Ventilating
Fans—Wall
Fasteners—Screen
Faucets—Automatic Control
Faucets—Basin
Faucets—Elbow
Faucets—Floor
Faucets—Foot
Faucets—Knee
Faucets—Laboratory
Faucets—Mixing
Faucets—Self Closing
Faucets—Shower
Faucets—Table
Faucets—Wall
Feed Water Heaters
Feed Water Regulatores
Felt Deadening
Felt—Insulating
Felt Roofing
Felt Sheathing
Fences—Concrete
Fencing—Iron
Fence Posts
Fence Post Machines
Fence Post Molds—Cement
Fences—Wood
Fencing Wire
Fibre Asbestos—Laboratory
Fibre Boards—Processed
Fibre Tile
Filing Cabinets
Fillers—Asphalt
Fillers—Wood—Liquid
Fillers—Wood Paste
Filters—Air
Filters—Gravity or Pressure
Filters—Oil
Filters—Swimmingpool
Filters—Water
Finials
Fire Alarms
Fire Brick
Fire Clay
Fire Doors—Corrugated
Fire Door Equipment
Fire Door Hardware
Fire Door Hollow Metal
Fire Door—Kalamein
Fire Doors—Tin Clad
Fire Door Stock
Fire Box Boiler
Fire Box Grates
Fire Exit Panic Bolts
Fire Escapes—Spiral
Fire Escapes—Standard
Fire Extinguishers
Fire Hose
Fire Hose Cabinets
Fire Hose Carts
Fire Hose Racks
Fire Place Ash Traps
Fire Place Dampers
Fire Place Fittings
Fire Place Flues
Fire Place Grates
Fire Place Throats
Fire Places
Fire-Proof Flooring
Fire-Proof Shutters
Fire-Proof Studs
Fire-Proof Tile
Fire-Proofing Partition Tile
Fire Shutters
Fittings—Boiler
Fittings—Gas Pipe
Fittings—Radiator
Fittings—Water Pipe
Flagging—Slate
Flagging—Stone
Flag Pole Fittings
Flag Poles—Metal
Flag Poles—Wood
Flashing Blocks (Vitreous Clay)
Flashing—Copper
Flashing Forms—Metal
Flashing—Galvanized Steel
Flashing—Lead
Flashing—Zinc
Flexible Cord
Flexible Shafts
Flexible Steel Conduits
Floor Boxes
Floor Clips
Floor Cement
Floor Construction System—Concrete "I" Beam and Metal Forms
Floor Construction System—Concrete "I" Beam and Tile
Floor Construction System—Reinforced Flat Slab
Floor Construction System—Beam and Girder
Floor Construction System—Hollow Tile
Floor Construction System—Vaulted
Floor Coverings—Canvas
Floor Cores
Floor Drains
Floor Faucets
Floor Finish
Floor Hardware
Floor Hinges
Floor Hoppers—Concrete
Floor Lights
Floor Lath
Floor Mats—Leather



Factory Building of the Appleton Electric Company, Chicago, Ronneberg and Pierce, Architectural Engineers.

Floor Mats—Rubber
Floor Nailing Sleepers—Wood
Floor Paint
Floor Painting Machine
Floor Plates—Cast Iron
Floor Plates—Pressed Steel
Floor Plates—Steel
Floor Polishing Machines
Floor Receptacles
Floor Refinishing Machines
Floor Registers
Floor Repair—Cement
Floor Scrapers
Floor Scraper Blades
Floor Scrubbing Machines
Floor Surfacing Machines—Electric
Floor and Wall Tile
Floor Varnish
Floor Wax
Flooring—Acid Proof
Flooring—Asphalt
Flooring—Asphalt Mastic
Flooring—Bowling Alley
Flooring—Brick
Flooring—Cement—Plain or Colored
Flooring—Ceramic
Flooring—Composition Magnesite—Non-Slip
Flooring—Cork
Flooring—Cork Composition
Flooring—Encaustic Tile
Flooring—Felt
Flooring—Fir
Flooring—French Flint
Flooring—Maple
Flooring—Mastic
Flooring—Mosaic
Flooring—Non-Slip Tile
Flooring—Oak
Flooring—Parquentry
Flooring—Red Gum
Flooring—Rubber Sheet
Flooring—Rubber Tile
Flooring—Sanitary
Flooring—Slate
Flooring—Soapstone
Flooring—Spruce
Flooring Surfacing Machine
Flooring—Terrazzo—Expansion Joints
Flooring—Terrazzo
Flooring—Terrazzo Floor Tile
Flooring—Tile
Flooring—Vit. Floor Tile
Flooring—Wood Block—Built-Up
Flooring—Wood Block—Creosote
Flooring—Yellow Pine
Flue Cleanout Doors
Flue Lining
Flue Thimbles
Flues—Smoke
Flush Switch Plates
Folding Dining Rooms
Folding Doors
Folding Partitions
Food Conveyors
Food Scales
Foot Baths
Foot Control Faucets
Foot Lights
Foot Scrapers
Foot Switches
Force Pumps
Form Clamps
Forms—Concrete Construction
Foundries
Framed Mirrors
Freight Elevator Doors
Freight Elevator Doors—Semi-Automatic
Freight Elevator Door Control—Automatic
Freight Elevator Gates
Freight Elevator Gates—Semi-Automatic
Freight Elevator Gate Operators
Freight Elevators
Fresh Air Inlets
Fresh Air Inlets—Beehive
Fresh Air Inlets—Wall
Friction Clutches
Friction Hoists
Fuel Hoists
Furnace Pipe
Furnace Registers
Furnace Regulators
Furnaces—Automatic
Furnaces—Hot Air—Pipeless
Furnaces—Hot Air—Standard
Furnaces—Air and Water Combination
Furnaces—Oil Burning
Furniture—Bank
Furniture—Barber Shop
Furniture—Church
Furniture—Drafting
Furniture—Garden
Furniture—Hospital
Furniture—Household
Furniture—Laboratory
Furniture Making Clamps
Furniture—Office
Furring—Hollow Tile
Furring—Metal
Furring Nails
Fuse Plugs
Fuse—Wire
Fuses—Electric
Galvanized Clips
Galvanized Nails
Galvanized Sheets
Garage Door Hardware
Garage Doors—Steel
Garage Doors—Wood
Garage Door Bolts
Garage Door Hangers
Garage Door Elevators
Garage Fixtures (Outdoor)
Garage Heaters
Garage Windows—Steel
Garage Windows—Wood
Garages—Metal—Portable
Garages—Ramp Type
Garages—Standard
Garages—Wood—Portable
Garbage and Refuse Incinerators
Garbage Burner Plants
Garbage Burners
Garbage Refrigerators
Garbage Receivers
Garbage Water Heaters
Garden and Lawn Decoration
Garnet Paper
Gas Appliances
Gas Burners
Gas Heaters
Gas Grates
Gas Hot Plates
Gas Irons
Gas Locks

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Gas Machinery
Gas Radiators
Gas Ranges
Gas Reservoirs
Gas Stoves
Gas Water Heaters
Gas Water Heaters—Automatic
Gasoline Engines
Gates—Bronze
Gates—Elevator
Gates—Iron and Wire
Gauge Boards
Gauges—Indicating and Recording
Gauges—Pressure and Vacuum
Gauges—Steam
Gauges—Water
Generators—Acetylene
Generators—AC-DC
Generators—Electric
Generators—Gasoline
Generators—Motor
Generators—Steam
Generators—Turbine
Generators—Vacuum
Generators—Water Wheel
Glass—Art
Glass—Embossed
Glass—Etched
Glass—Figured and Plain
Glass—Figured—Wire
Glass—Fireproof
Glass—Lead
Glass—Obscure
Glass Partitions
Glass—Polished Plate
Glass—Prism
Glass—Roof Tile
Glass—Safety Sheet
Glass—Sidewalk Lights
Glass—Structural
Glass, Window—Crystal
Glass, Window—Sheet
Glass, Wire—Corrugated
Glass, Wire—Plain
Glazing Beads
Glazing Compound
Glazing—Lead
Glazing Points
Granite
Granite Columns
Granite—Crushed
Granite Gas Logs
Granulated Cork
Grain Bins
Grain Elevators—Built-In
Grain Elevator Doors
Grate Hinges
Gratings—Cast Iron
Gratings—Sidewalk
Gratings—Area
Grind Stones
Grease Traps
Green Houses and Conservatories
Grilles—Metal
Grounds—Metal
Grounds—Sheet
Grounds—Wood
Guards—Door
Guards—Jamb
Guards—Screen Door
Guards—Sky Light
Guards—Snow
Guards—Tree
Guards—Wheel
Guards—Window
Guards—Wire
Guns—Cement
Guns—Paint
Gutters—Cast Iron
Gutters—Sheet Metal
Gutters—Sidewalk
Gymnasium Equipment
Gypsum Block Partitions
Gypsum Concrete
Gypsum Lath
Gypsum Plaster
Gypsum Slabs
Gypsum Tile
Gypsum Wallboard
Hand Elevators
Hand Hoists
Hand Screws
Hand Trucks
Hand Power Cranes
Hand Power Derricks
Hangers—Beam
Hangers—Elevator Door
Hangers Folding Door
Hangers—Garage Door
Hangers—Garment
Hangers—Pipe
Hangers—Radiator
Hanging Closets
Hardeners—Concrete
Hardware—Builders'
Hardware—Casement Window
Hardware—Garage Door
Hardware Locks—Window Ventilating
Hardware—Screens
Hardware—Toilet Room Partitions
Hardware—Window
Hardwood Flooring
Hardwood Floor Oiler
Heat Deflectors
Heat Insulation
Heat Regulators
Heaters—Electric
Heaters—Feed Water
Heaters—Gas
Heaters—Tank
Heaters—Water
Heaters, Water—Automatic
Heaters, Water—Coil
Heaters, Water—Electric
Heaters, Water—Gas
Heat Regulating Systems
Heating—Air Control Heads
Heating Boilers
Heating—Direct—Indirect
Heating—Electric
Heating—Gas
Heating—Garage
Heating—Greenhouse
Heating—Hot Air
Heating—Hot Air and Water Combination
Heating—Hot Blast
Heating—Hot Water
Heating—Indirect
Heating—Steam
Heating—Underground
Heating Systems—Vacuum Steam

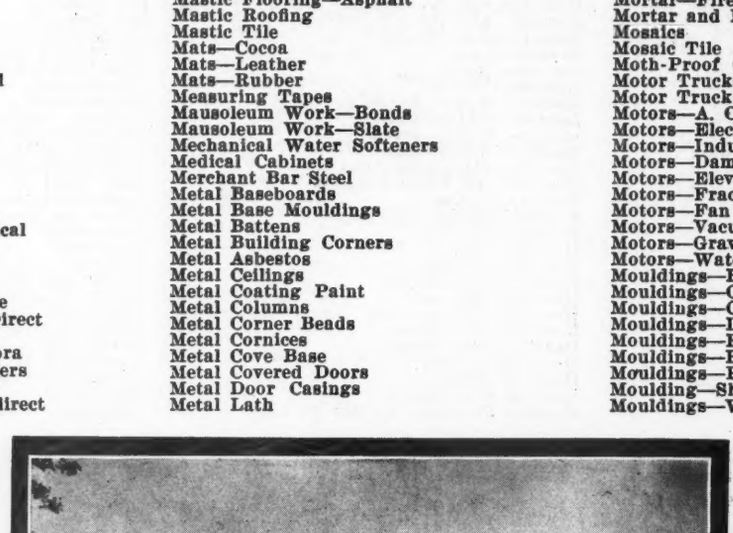
Woodlawn Trust and Savings Bank, Chicago, Weary and Alford, Architects.

Heating Systems—Vapor
Heating Systems—Warm Air
Heating and Ventilating Systems
High Temperature Cement
Hinges—Door
Hinges—Floor
Hinges—Gravity
Hinges—Invisible
Hinges—Spring
Hinges—Strap
Hoists—Ash
Hoists—Chain
Hoists—Sidewalk
Hollow Building Blocks
Hollow Clay Tile
Hollow Metal Construction
Hollow Metal Doors
Hollow Metal Windows
Hollow Steel Doors
Hollow Steel Sash
Hollow Steel Windows
Hollow Steel Pivoted Windows
Hollow Tile—Cinder
Hollow Tile—Clay
Hollow Tile—Concrete
Hollow Tile Flooring
Hollow Tile Machines—Cement
Hollow Tile Mortar
Hollow Tile Partitions
Hospital Door Hardware
Hospital Furnishings
Hose—Fire
Hot Air Ducts
Hot Air Radiators
Hot Air Wall Registers
Hot Water Boilers
Hot Water System Fittings
Hotel Equipment
Hot Water Plants
Hot Water Radiators
Hot Water Thermostats
House Pumps
Humidifiers
Hydrated Lime
Ice Boxes
Ice Breakers
Ice Cream Freezer
Ice Elevators
Ice Making Machinery
Ideal Wall—Brick
Illuminating Glassware
Incinerators
Indirect Lighting Systems
Individual Shingles—Asbestos and Cement
Individual Shingles—Asbestos and Asphalt
Individual Shingles—Asphalt
Individual Shingles—Wood
Individual Shingles—Stained
Induction Motors
Industrial Cars
Injectors
Inserts
Inside and Outside Corners—Rubber
Inside Measuring Rules
Insulating Boards
Insulating Felts
Insulating Lumber
Insulating Material
Insulating Paper
Insulating Tape
Insulation—Brick
Insulation—Cork
Insulation—Hot Water Pipe
Insulation—Magnesia
Insulation—Mineral Wool
Insulation—Paper
Insulation—Plumbing
Insulating Quilt
Instrument Cabinets
Instruments—Laboratory
Insurance—Workmen's Compensation
Interior Plaster
Interior Tile
Interior Trim—Hardwod
Interior Trim—Marble
Interior Trim—Metal
Interior Trim—Pine
Interior Trim—Slate
Interior Telephones
Interior Varnish
Interlocking Tile
Invalid Hoists
Ironing Board Cabinets
Iron and Steel Doors
Iron and Steel Fences
Iron and Steel Sheets
Iron Channels
Iron Columns
Ironers, Gas and Electric—Built-In
Iron Fencing
Iron Gates
Iron Gratings
Iron Pipe
Iron Railings
Iron Stairways
Jambs—Metal
Joint Blocks
Joint Pillars
Joist Anchors
Joist Hangers
Joists—Pressed Steel
Kalamein Doors
Keene's Cement
Kerosene Burners
Kerosene Engines
Keyless Locks
Kick Plates
Kilns
Kitchen Cabinets
Kitchen Cabinet Hardware
Kitchenettes, Steel—Built-In
Kitchen Interior Trim
Kitchen Dishwashers
Kitchen Sinks
Laboratory Fixtures
Lacquers
Ladders—Rolling
Ladders—Swimming Pool
Lamp Posts—Cast Iron
Lamp Sockets
Lamp Standards
Latches
Latches—Self-Releasing
Lath—Metal
Lath—Stucco Construction
Lath—Wire
Lath—Wood
Lattice Fences
Laundry Chutes
Laundry Dryers
Laundry Machinery and Equipment
Laundry Stoves
Laundry Traps
Laundry Tubs
Lavatory Fittings and Fixtures
Lavatory Hardware
Lavatory Walls, Ceilings and Wainscoting
Lavatories
Lavatories—Clinical
Lavatories—Dental
Lavatories—General
Lavatories—Porcelain

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Lavatory Waste
Lawn Furniture
Lawn Sprinklers
Lead Covered Wire
Leaded Glass
Lead Pipe
Lead—Sheet
Lead Work—Ornamental
Letters and Numbers—Metal
Level Glasses
Level Sights
Library Book Stacks
Library Shelving
Library Fixtures
Lifts—Hand
Lifts—Electric
Lifts—Package
Lighting Equipment—Electrical
Lighting Fixture Glassware
Lighting Fixture Hangers
Lighting Fixture Shades
Lighting Fixtures—Acetylene
Lighting Fixtures—Bank—Direct—Indirect
Lighting Fixtures—Candelabra
Lighting Fixtures—Chandeliers
Lighting Fixtures—Electric
Lighting Fixtures—Gas—Indirect
Lighting Fixtures—Outdoors
Lighting Fixtures—Show Window
Lighting Fixtures—Wall
Lighting Systems
Lighting and Power Systems
Lighting System Fittings
Lightning Conductors
Lightning Rods
Lights—Vault and Sidewalk
Lime—Hydrated
Lime—Lump
Lime Mortar—Limestone
Lime—Waterproofing
Line Levels
Linoleum—Battleship
Linoleum—Plain
Linoleum—Cement
Linoleum—Paint
Linoleum—Tile
Lining Tank—Acid Resistance
Linseed Oils
Liquid Soap Dispensers
Lockers—Steel
Lockers—Wood
Lock Attachments
Lock Nuts
Locks—Door
Lumber—Birch
Lumber Crayons
Lumber—California Redwood
Lumber—Creosoted
Lumber—Cypress
Lumber—Fir
Lumber—Gum
Lumber—Hemlock
Lumber—Mahogany
Lumber—North Carolina Pine
Lumber—Oak
Lumber—Pondosa
Lumber—Pressed Steel
Lumber—Red Cedar
Lumber—Red and White Fir
Lumber—Spruce
Lumber—Walnut
Lumber—Western Fir
Lumber—Western Pine
Lumber—White Pine
Lumber—Yellow Pine
Lumbermen's Rules
Lumber Yard Derricks
Luminiers
Luminous Pendants
Lumnite Cement
Lump Lime
Lunchroom Equipment
Machinery—Sound Deadening System
Magnesia Cement
Magnesia Flooring
Magnesia Insulating Covering
Magnesite Colors
Magnesite Flooring Composition
Magnesite Paint
Magnesite Wainscoting
Magnet Wire
Mail Boxes
Mail Chutes
Mail Chute Boxes
Manhole Covers and Frames
Manhole Forms
Mantels
Manual Training Benches
Marble
Marble—Artificial
Marble Ceilings
Marble Cleaner
Marble—Crushed
Marble—Flooring
Marble—Interior Trim
Marble—Wainscoting
Marquises
Mason's Cement
Mastic Flooring—Asphalt
Mastic Roofing
Mastic Tile
Mats—Cocoa
Mats—Leather
Mats—Rubber
Measuring Tapes
Mausoleum Work—Bonds
Mausoleum Work—Slate
Mechanical Water Softeners
Medical Cabinets
Merchant Bar Steel
Metal Baseboards
Metal Base Mouldings
Metal Battens
Metal Building Corners
Metal Asbestos
Metal Ceilings
Metal Coating Paint
Metal Columns
Metal Corner Beads
Metal Cornices
Metal Cove Base
Metal Covered Doors
Metal Door Casings
Metal Lath



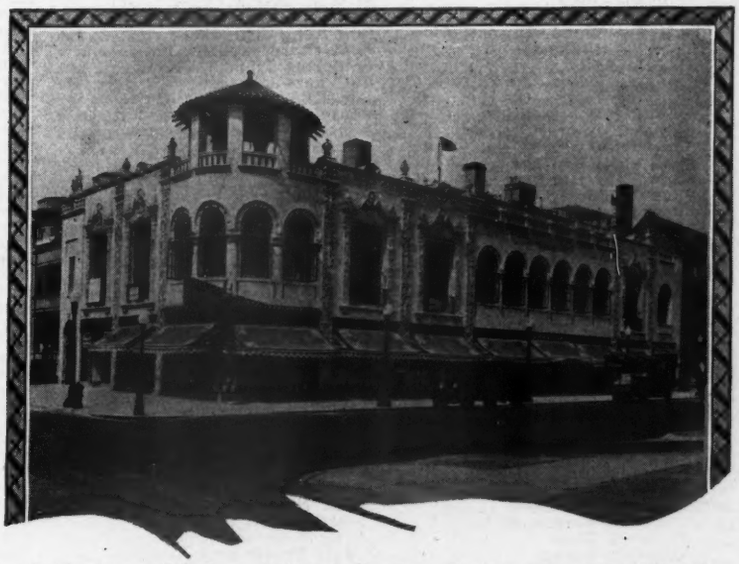
Lindbloom High School, Chicago, A. F. Hussander, Architect.

Metal Lath—Expanded
Metal Lath—Perforated Sheet
Metal Lath—Self-Furring
Metal Lath—Wire
Metal Letters
Metal Lockers
Metal Lumber
Metal—Mineral Wool Sheathing Combination
Metal Mouldings
Metal Moulding Switches
Metal Newels
Metal Partitions
Metal Preservative
Metal Protection—Asbestos
Metal Protection—Paint
Metal Roofing—Corrugated
Metal Roofing—Sheets
Metal Sash Putty
Metal Shingles
Metal Screw Holes
Metal—Tar Felt Combination
Metal—Terra Cotta Combination
Metal Trim
Metal Thresholds
Metal Wainscot
Metal Weatherstrips
Metal Work—Ornamental
Metal Windows—Casement
Metal Windows—Double Hung
Metal Windows—Hinged
Metal Windows—Pivoted
Meter Boxes
Meters—Electric
Meters—Gas
Meters—Water
Millwork—Exterior
Millwork—Interior
Mineral Wool
Mirrors
Mirrors—Patented Back
Mirrors—Silvered
Monel Metal Sinks
Mortar—Asbestos
Mortar—Bricklayers'
Mortar—Cement
Mortar Boards—Steel
Mortar Boxes—Steel
Mortar Colors
Mortar—Fire Clay
Mortar and Plaster Mixers
Mosaics
Mosaic Tile
Moth-Proof Closets
Motor Trucks
Motor Truck Trailers
Motors—A. C. or D. C.
Motors—Electric
Motors—Induction
Motors—Damper Regulator
Motors—Elevator
Motors—Fractional Horse Power
Motors—Fan or Blower
Motors—Vacuum Cleaner
Motors—Gravity
Motors—Water
Mouldings—Brass
Mouldings—Composition
Mouldings—Carved Wood
Mouldings—Drawn Metal
Mouldings—Extruded
Mouldings—Hollow Metal
Mouldings—Picture—Metal
Moulding—Sheet Metal Jambs
Mouldings—Wrought Iron
Movable Stairs
Moving Picture Booths
Muslin—Wall
Nailing—Compound
Nails—Cement Coated
Nails—Copper
Nails—Cut
Nails—Finish
Nails—Galvanized
Nails—Slating
Nails—Wire
Natatorium
Netting—Screen
Netting—Wire
Netting—Wire Cloth
Non-Slip Composition Tile
Nosing—Aluminum
Nosing—Cork
Nosing—Metal
Nosing—Non-Slip
Nosing—Rubber
Nosing—Tile
Numbers—Bronze
Numbers—Metal
Oak Lumber
Office Partitions
Oil Burner Heating Plants
Oil Extractors
Oil Filtering
Oil Flooring Finish
Oil Gas Heaters
Oil Service Systems
Oil Storage Equipment
Oil Tanks
Opera Stairs
Organs
Ornamental Brackets
Ornamental Bronze Work
Ornamental Cement
Ornamental Composition
Ornamental Iron
Ornamental Lead
Ornamental Molds—Cement
Ornamental Plastering
Ornamental Sheet Metal
Outlet Boxes
Oven Heat Regulators
Ovens—Baking
Oxy-Chloride Plaster
Packing House Equipment
Package Receivers
Package Receiving Doors
Padlocks
Paints
Paint Fillers
Paint and Varnish Removers
Paint—Acid Resisting
Paint—Asphalt
Paint—Boiler
Paint—Bonding Plaster
Paint—Brick
Paint—Caen Stone Finish
Paint—Carbon
Paint—Cement Floor
Paint—Concrete Wall
Paint—Cold Water
Paint—Damp-proofing
Paint—Deck
Paint—Enamel
Paint—Exterior
Paint—Fire-Retarding
Paint—Galvanized Surfaces
Paint—Graphite
Paint—Interior
Paint—Metal Protective
Paint—Mill White
Paint—Oil
Paint—Priming
Paint—Radiator
Paint Spraying Machines
Paint—Steel Stack
Paint—Structural
Paint—Wall Flat
Paint—Water Color

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Paint—White Lead
Panel Boards
Panelling Wood
Panic Exit Bolts
Pantry—Built-In
Pantry Sinks
Pantry Windows
Paper—Building
Paper—Deadening
Paper—Red Rosin
Paper—Water-Proof
Parquetry Flooring
Parting Beads
Partitions—Bathroom
Partitions—Fireproof
Partitions—Folding—Wood
Partition—Gypsum Tile
Partitions—Hollow Metal
Partitions, Interchangeable—Wood
Partitions—Office
Partitions—Portable
Partitions—Rolling
Partitions—Steel
Partitions—Telescoping
Partition Tile—Hollow
Partitions, Toilet Room—Wood
Partitions, Toilet Room—Metal
Partitions—Sound-Proof
Partitions—Wire
Pebble Dash
Peds
Pergolas
Picture Moulding
Piling Clamps
Pile—Concrete
Pile, Wood—Plain
Pile, Wood—Creosote
Piling—Sheet Metal
Pipe—Aluminum
Pipe—Asphalted
Pipe—Brass
Pipe—Cast Iron
Pipe—Clay
Pipe—Copper
Pipe—Copper Lined
Pipe Conductor—Lead
Pipe Conductor—Sheet Metal
Pipe Conductor—Wood
Pipe Columns
Pipe—Conduit
Pipe, Covering—Asbestos
Pipe—Culvert
Pipe—Fittings
Pipe Hangers
Pipe—Lead
Pipe—Nickel Plated
Pipe Protection
Pipe—Spiral Construction
Pipe, Steel—Plain
Pipe, Steel—Galvanized
Pipe—Silver
Pipe, Wrought Iron—Plain
Pipe, Wrought Iron—Galvanized
Pipeless Furnaces
Pivot Hinges
Plan Books
Plaster—Asbestos
Plaster Board
Plaster Base
Plaster Board Ceilings
Plaster Bond
Plaster—Cement
Plaster—Exterior
Plaster—Fibre
Plaster—Gypsum
Plaster—Bed Wall
Plaster—Hydrated Lime
Plaster—Magnesite
Plaster—Sanded
Plaster—Wood Fibre
Plate Glass
Plate Warmer
Playground Apparatus
Plinth Blocks—Rubber
Plugs and Receptacles
Plumbing Fixture Fittings
Plumbing Fixture Fittings—Brass.
Plumbing Fixture Fittings—Escutcheons
Plumbing Fixtures—General
Plumbing Fixtures—Hospital
Plumbing Fixtures—Industrial
Plumbing Fixtures—Laundry Trays
Plumbing Fixtures—Porcelain
Plumbing Fixtures—Slate
Plumbing Fixtures—Vitreous
Pneumatic Cleaners
Pneumatic Water Supply Systems
Pneumatic Water Tanks
Porcelain Lavatories
Plunges and Pools
Porch Shades
Portable Buildings—Steel
Portable Buildings—Wood
Polishing Attachments for Floor Surfacers
Polishing Brushes
Polishing Machines, Floor—Electric
Porch Bases
Porch Rails
Porch Spindles
Portable Conveyors
Portland Cement
Portland Cement Stucco
Post Bases
Post Cap
Power Sanders
Power Take-Off
Post Office Lock Boxes
Power Plants
Power Plant Specialties
Prison Construction
Pressed Steel Beams
Pressed Steel Channels
Pressed Steel Joists
Pressure Blowers
Prism Glass
Prism Lights
Protractors
Pulleys—Axle Type
Pulleys Sash
Pulleys, Sash—Counter Balance
Pulleys—Overhead
Pulleys—Pressed Metal
Pumps—Air Replacement
Pumps—Air Line Heating System
Pumps, Air—Rotary
Pumps—Water Feed
Pumps—Force
Pumps—Pressure



A Business Block and Roof Garden Facing Clarendon Beach, Chicago, Alfred Alschuler, Architect.

Pumps—Ammonia
Pumps, Bilge—Automatic
Pumps—Centrifugal
Pumps—Deep Well
Pumps—Diaphragm
Pumps—Fire Protection
Pumps—Hand, Force or Lift
Pumps—House and Tank
Pumps—Hydraulic Pressure
Pumps—Gasoline and Oil
Pumps—Power
Pumps—Rotary
Pumps—Spray
Pumps—Storage Tank
Pumps—Sump
Pumps—Vacuum
Pumps—Waste Pipe
Pumps and Receivers—Condensation
Push Button Elevators
Push Bar—Door
Push Buttons—Electric
Puttyless Sash
Purifiers—Air
Purifiers—Water
Putty
Putty—Cement
Putty—Lead or Zinc
Putty—Metal Sash
Quarry Tile
Racks for Cold Storage
Racks—Garment
Racks—Bin and Storage
Radiator Bottoms
Radiator Covers
Radiator Enclosures
Radiator Fittings
Radiator Guards
Radiator Hangers
Radiator Shields
Radiator Traps
Radiator Valves
Radiators—Cast Iron
Radiators—Electric
Radiators—Gas
Radiators—Gasoline
Radiators—Steam and Hot Water
Radiators—Pressed Steel
Radio Equipment
Rail or Track Brackets
Railing—Box
Railings—Brass or Bronze
Railings—Iron
Railings—Pipe
Railings—Wood
Rails—Chalk
Range Boilers
Range Hoods
Ranges—Coal
Ranges—Electric
Ranges—Gas
Receivers—Ash
Receivers—Condensation
Receivers—Garbage
Receivers—Milk
Receptacle Plugs—Flush
Reciprocating Switches
Red Cedar Shingles
Reducing Valve
Reflectors—Lighting
Refrigerating Machines—Automatic
Refrigerating Machines—Domestic
Refrigerating Machines—Electric
Refrigerating Machines—Gas
Refrigerating Machines—Ice Making
Refrigerator Accessories
Refrigerators—Coolers
Refrigerator Doors
Refrigerator Drip Traps
Refrigerator Insulation
Refrigerator Windows
Refrigerator Thermostats
Refrigerators
Refrigerators—Built-In
Refrigerators—Outside Icing
Registers—Heating, Hot Air Wall
Registers—Ventilating
Regulating Valve
Regulators—Air Duct
Regulators—Feed Water
Regulators—Gas
Regulators—Motor Speed
Regulators—Pressure
Regulators—Tank Overflow
Regulators—Temperature
Regulators—Temperature Dampers
Regulators—Water Pressure
Regulators—Water Supply
Reinforced Concrete Forms
Reinforced Lintel
Reinforcing—Steel
Reinforcing—Bar
Reinforcing Bar Separators
Reinforcing—Concrete Bar Supports
Reinforcing Lath
Relief Valves
Reversible Doors
Reversible Windows
Restaurant Equipment
Revolving Doors
Revolving Screens
Rheostats
Rigid Conduits
Rods—Curtain
Rods—Lightning
Rollers—Shade
Rolled Roofing
Rolling Beds
Rolling Doors—Steel
Rolling Partitions
Rolling Shutters—Steel
Roof Castings
Roof Drains
Roof Lights
Roof Trimmings
Roof Ventilators
Roof Trusses—Steel
Roof Trusses—Wood
Roof Windows—Steel
Roofing—Asbestos
Roofing—Asphalt
Roofing Brackets
Roofing—Canvas
Roofing Cement—Plastic
Roofing—Composition
Roofing—Felt
Roofing, Iron—Asbestos Covered
Roofing, Iron—Corrugated
Roofing, Iron—Galvanized
Roofing—Lead
Roofing Nails
Roofing—Paper
Roofing, Prepared—Asbestos
Roofing, Prepared—Asphalt
Roofing Putty
Roofing Tile Machine
Roofing, Shingles—Asphalt Rock Surfaced
Roofing, Shingles—Wood
Roofing, Shingles—Stained Wood
Roofing Slate

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Roofing Slate—Inlaid
Roofing Tile Shapes
Roofing Tile—Promenade
Roofing Tile Cement
Roofing Tile—Burnt Clay
Roofing Tin
Room Heaters
Rope—Cotton
Rope—Hemp
Rope—Wire
Rope—Blocks
Rope—Hoists
Rope—Lath
Rosettes—Electric
Rubber Covered Wire
Rubber Flooring
Rubber Mallets
Rubber Paving
Rubber Roofing
Rubber Stair Treads
Rubber Tile
Rubber Tile Flooring
Rubbish Burners
Safes, Portable—Fireproof
Safes, Portable—Steel
Safes—Wall
Safety Guards—Garage Door
Salamanders
Sand and Gravel Screens
Sanitary Flooring
Sash Balances
Sash Bars—Skylight
Sash Balance Pulleys
Sash Chain
Sash Cord
Sash Counter Balance
Sash Frames—Steel
Sash Frames—Wood
Sash—Hollow Metal
Sash Holders
Sash Gutters
Sash Lifts
Sash Locks
Sash Operators—Casement
Sash Operators—Skylight
Sash—Pivoted
Sash Pulleys
Sash Ribbons
Sash, Steel—Fixed
Sash, Steel—Casement
Sash—Storm
Sash Supporters
Sash Trimmers
Sash Weights
Scagliola
Scales
Scales—Bathroom
School Equipment
Schoolroom Heaters
Scrapers—Shoe
Screeds—Metal
Screen Cloth
Screen Door Hinges
Screen Door Sets
Screen Hangers
Screen Fasteners
Screen Hardware
Screen—Windows—Steel
Screen Wire Stretcher
Screens—Door and Window
Screens—Bank
Screens—Door and Window Roller
Screens—Teller Cages
Screens—Ventilator
Screw Holes—Metal
Scribers
Scrubbing Machines
Scrub-Up Sinks
Seamless Tubing
Seats—Amphitheater and Auditorium
Seats—Closet
Separators—Air
Separators—Oil
Separators—Steam
Self-Closing Faucets
Semi-Indirect Lighting System
Septic Tanks
Septic Closet Vaults
Sewage Disposal Plants
Sewer Drain Fittings
Sewage Ejectors
Sewer Pipe
Sewer Pipe Machines
Sewer Pipe Molds—Cement
Sewer Pipe Strainers
Sewer Tile
Sewer Tile Jointing Compound
Sewer Tile Machines—Cement
Sewer Tile—Split
Shade Adjusters
Shade Fixtures
Shade Rollers
Shades—Adjustable
Shades—Ventilating
Shades, Window—Cloth
Shades, Window—Folding
Shafting and Hangers
Sheathing Boards
Sheathing Boards—Asbestos
Sheathing Boards—Gypsum Fibre
Sheathing Boards—Portland Cement
Sheathing Boards—Mineral Wool
Sheathing Boards—Gypsum Plaster and Fibre Board
Sheathing Brackets
Sheathing Lath
Sheathing Paper
Sheet Metal Coating
Sheet Metal—Corrugated
Sheet Metal Cornices
Sheet Metal—Drawn
Sheet Metal—Galvanized
Sheet Metal Ornaments
Sheet Metal Tube Iron
Sheet Metal Windows
Sheet Metal Window Hardware
Sheet Brass
Sheet Copper
Sheet Lead
Sheet Steel
Sheet Zinc
Shelf Brackets
Shellac
Shellac Pots
Shingles, Asbestos—Rock Surfaced
Shingles, Asphalt—Rock Surfaced
Shingles—Metal
Shingles, Wood—Stained
Shingles, Wood—Untreated
Shingles—Stained
Shingle Nails
Shipping Doors—Jacknife
Shipping Doors—Overhead
Shipping Doors—Sliding
Shipping Doors—Trolley
Show Case Doors
Show Case Fittings
Show Case Hardware
Show Window Construction
Show Window Glass Protectors
Shower Baths
Shower Bath Curtains
Shower Bath Receptors
Shower Faucets
Shower Partitions
Shower Stalls
Shower Mixing Valves
Shutter Hardware
Shutter Operators
Shutters—Rolling Steel
Shutters—Rolling Wood
Shutters—Steel Plate
Shutters—Tin Clad
Shutters—Wood
Siamese Twin Bolts
Sidewalk Black
Sidewalk Doors
Sidewalk Elevators
Sidewalk Forms—Steel
Sidewalk Glass
Sidewalk Lights
Sidewalk Ventilators
Siding—Asbestos
Siding, Metal—Corrugated
Siding—Wood
Siding Clips
Siding Joints
Signal Systems—Factory
Signal Systems—Hospitals
Signal Systems—School
Signs—Brass and Bronze
Signs—Glass
Signs—Metal
Sinks—Acid-proof
Sinks, Cement—Reinforced
Sinks—Clinical
Sinks—Copper
Sinks—Kitchen
Sinks—Laboratory
Sinks—Porcelain
Sinks—Sheet Steel—Scullery
Sinks—Scrub-Up
Sinks—Slate
Sinks—Slop
Sinks—Soapstone
Sinks—White Metal
Siphons, Sewage—Automatic
Sitz Baths
Skylight Guards
Skylight Ventilators
Skylights—Cast Iron
Skylights—Glass and Concrete
Skylights—Puttyless
Skylights—Sheet Metal
Skylights—Steel and Lead
Skylight Shackles
Skintled Brick Work
Slab Flush Doors
Slab Shingles—Asphalt
Slab Shingles—Cement-Asbestos
Slate—Asbestos
Slate Baseboards
Slate Blackboards
Slate Electrical Work
Slate Fastenings
Slate Flooring
Slate Granules
Slate—Interior Trim
Slate Mantels
Slate Partitions
Slate Roofing
Slate Structural
Slate Surfaces and Finish
Slate Tanks
Slate Thresholds
Slate Tile
Slate Wainscoting
Slaughter House Equipment
Sleeves, Floor—Adjustable
Sleeping Porch Construction
Slide Scale Rules
Slide Doors
Sliding Door Track
Sliding Door Hangers
Sliding Door Pocket Construction
Sliding Partition Hangers
Sliding Stairs
Slop Sinks
Smelter
Smoke Consuming Boilers
Smoke Jacks
Smoke Indicators
Snap Switches
Snow Guards
Soap Stone Partitions
Soap Stone Sinks
Soap System—Liquid, Gravity
Sockets and Receptacles
Soda Fountain Construction
Soft Wood Doors
Soldering Compounds
Soldering Coppers
Soldering Irons
Softeners—Water
Solid Porcelain Lavatories
Sound Deadening Materials
Sound Deadening Systems
Sound Insulation
Speed Regulators
Spray Paint Equipment
Spring Bolts
Spring Joint Rules
Sprinkler Systems
Sprinkler System Alarms
Spun Metal
Stage Equipment
Stains—Shingle
Stains—Wood
Stair Corners
Stains—Acid
Stains—Brick
Stains—Creosote
Stains—Mortar
Stains—Oil
Stains—Plaster
Stains—Shingle
Stains—Stucco
Stains—Water
Stains—Wood
Stair Nosings
Stair Plates
Stair Treads
Stair Treads and Risers—Composition
Stair Treads and Risers—Metal
Stair Treads and Risers—Slate
Stair Treads and Risers—Terrazzo
Stairs—Iron and Steel
Stairs—Precast Concrete
Stairs—Spiral
Stairs—Steel and Concrete
Stairs—Wood
Stairways—Folding
Stairways—Metal
Stalls—Shower
Stamped Metal
Stand Pipes
Statuary—Metal
Statuary—Plaster
Statuary—Terra Cotta
Stays—Door
Stays—Sash
Steam Boilers
Steam Engines
Steam Heating Apparatus
Steam Heating Plants
Steam Radiators
Steam Traps
Steam Vaporizers
Steel Bins
Steel Bridging—Galvanized
Steel Buildings
Steel Cabinets
Steel Ceilings
Steel Cubicles
Steel Channels
Steel Door Jambs
Steel Doors
Steel Floor Plates
Steel Gratings
Steel Lockers
Steel Manufacturing Buildings
Steel Partitions
Steel Shelving
Steel and Wire Grilles
Steel Kitchens
Steel Lintels
Steel Millwork
Steel Rivets
Steel Rules
Steel Sash Ventilators
Steel Seats
Steel and Wire Grilles
Steel Stairways
Steel Shutters
Steel Stack Plates
Steel Stairs
Steel Stamps
Steel—Structural
Steel Tanks
Steel Tank Plates
Steel Tile
Steel Towers
Steel Ventilating Windows
Steel Wardrobes
Steel Windows
Steel Window Frames
Steel Wool
Sterilizers—Hospital
Sterilizers—Laundry
Sterilizers—Water
Stirrups—Beam
Stokers
Stone—Artificial
Stone—Building
Stone—Caen
Stone—Granite
Stone—Limestone
Stone—Marble
Stone—Sandstone
Stone—Soapstone
Stop—Adjusting Screws
Store Fixtures
Store Fixtures—Hardware
Store Fixtures—Ladder
Store Fronts
Store Front Ventilators
Storm Doors
Storm Sash
Storm Sash Fasteners
Storm Sash Hangers
Storage Bins
Storage Cabinets
Storage—Coal
Storage Gas
Storage Tanks
Storage Tank Heaters
Stove Pipe
Stoves
Structural Slate
Structural Steel
Strap and T-Hinges
Strip Shingles
Structural Steel Beams
Stucco
Stucco Base
Stucco Base—Metal Lath
Stucco Base—Wood Lath
Stucco Base—Fibreboard
Stucco Base—Plasterboard
Stucco Base—Abestosboard
Stucco Coloring
Stucco—Gypsum
Stucco—Lime
Stucco Machines
Stucco—Magnesia Plaster
Stucco—Magnesite
Stucco—Portland Cement
Stucco—Volcanic Lava
Stucco—Reinforcing
Stucco Waterproofing
Stucco Waterproof
Studding—Metal
Subsills—Stormproof
Sun Dials
Supports—Pipe
Surface Bolts
Surface Hinges
Surfacers
Surfacing Machines
Surveying Instruments
Suspended Ceilings
Surgical Instruments
Swimming Pool Ladders
Swimming Pool Construction
Switch and Buzzer Combination
Switch Board Instruments
Switch Board Construction
Switch Board—Telephone
Switch Board—Theater
Switch Boxes
Switch Covers
Switches—Electric
Switches—Electric Door
Switches—Elevator Door
Switches—Heating Appliance
Switches—Knives
Switches—Light
Switches—Motor Starting
Switches—Remote Control
Switches—Safety
Switches—Snap
Switches—Vacuum Cleaner
Table Tops
Tablets—Memorial
Tank Balls
Tank Heaters
Tank Structures
Tanks—Air
Tanks—Chemical Purposes
Tanks—Closet

For Sources of Supply, See Classified Index, Pages 460 to 496

Large Buildings—*Continued*

Tanks—Concrete
Tanks—Elevated
Tanks—Expansion
Tanks—Fuel Storage
Tanks—Gravity
Tanks—Hot Water
Tanks—Ice Water
Tanks—Insulated
Tanks—Pressure
Tanks—Radio Brick
Tanks—Septic
Tanks—Sewage
Tanks—Steel
Tanks—Storage
Tanks—Tower
Tanks—Wood
Tar
Tarred Felts
Telautographs
Telephone Booths
Telephone Cabinets
Telephone Fuses
Telephone Signal System
Telephone Switchboards
Telephone System—Automatic
Telephone System—Intercommunicating
Temperature Regulators
Terra Cotta
Terra Cotta Blocks
Terra Cotta Details
Terra Cotta Tile Facing
Terra Cotta Ornaments
Terra Cotta Tile
Terrazzo
Terrazzo Aggregates
Thatched Roofs
Theater Curtains
Theater Dimmers
Theater Rigging Loft Equipment
Thermostats
Thimbles—Metal
Thimbles—Terra Cotta
Thresholds—Illuminating
Thresholds—Metal
Thresholds—Wood
Throats—Fireplace
Ties, Wall—Metal
Tile
Tile—Acoustical
Tile—Boilers
Tile—Ceiling
Tile—Ceramic
Tile—Cork
Tile—Cork Composition
Tile—Decorative
Tile—Drain
Tile—Enamel
Tile—Faience
Tile—Floor Construction
Tile—Marble Floor
Tile—Rubber Floor
Tile—Terrazzo Floor
Tile, Glaze—Bright
Tile—Hollow Clay
Tile—Hollow Gypsum
Tile Hooks
Tile Mantels
Tile—Non-Slip
Tile—Paving
Tile, Paving—Asphalt
Tile Partitions
Tile Pattern Sheets
Tile Plants
Tile Wire
Tile—Promenade
Tile—Quarry
Tile Roofing
Tile Roofing—Burnt Shale
Tile Roofing—Clay
Tile Roofing—Cement
Tile Roofing—Cement Reinforced
Tile Roofing—Concrete
Tile Roofing—Gypsum
Tile Roofing—Gypsum Reinforced
Tile Roofing—Metal
Tile Roofing—Rubber Floor
Tile—Sewage Disposal
Tile, Sewer—Lock Joint
Tile—Spanish
Tile—Split
Tile—Trim
Tile—Vitreous and Semi-Vitreous
Tile Wainscoting and Walls
Tile Wall
Timber Joint Plates
Timbers
Time System
Toggle Bolts
Tin Clad Doors
Tin Roofing
Toilet Fittings
Toilet Interior Trim
Toilet Room Partitions
Toilet Seats
Toilet Stalls
Toilet Room Partition Hardware
Towers—Water
Tracing Cloth
Tractors
Trammels
Transmission Machinery
Transits
Transformers
Transom Chains
Transom Hardware
Transom Operators
Transom Ventilators
Traps—Air
Traps—Back Water
Traps—Clean-Out
Traps—Drain
Traps—Grease
Traps—Radiator
Traps—Return Steam
Traps—Siphon
Traps—Steam
Traps—Valve
Treads—Stair
Treads—Stair Aluminum
Treads, Stair—Asphalt
Treads, Stair—Cork
Treads, Stair—Cork Composition
Treads, Stair—Metal
Treads, Stair—Non-Slip
Treads, Stair—Rubber
Treads, Stair—Safety
Treads, Stair—Slate
Treads, Stair—Soapstone
Treads, Stair—Terrazzo Cast
Treads and Riser—Composition
Treads and Risers—Metal
Treads and Risers—Portland Cement
Treads and Risers—Rubber
Treads and Risers—Terrazzo
Trench Covering
Triangles
Trolleys and Tramways
Troughs—Water
Trusses—Roof—Steel
Trusses—Roof—Wood
Tubes—Boiler
Tubing—Brass
Tubing—Metal
Tubing—Round
Tubing—Seamless
Tubing—Rectangular
Tubs—Bath—Stationary
Tubs—Laundry
Tubs—Soapstone
Turnstiles
Turntables—Auto
Turrets
Underground Pipe Conduit
Vacuum Cleaners—Portable
Vacuum Cleaners—Stationary
Vacuum Pumps
Vacuum Steam Heating Systems
Valves—Air Line Return
Valves—Air Vent Automatic Radiator
Valves—Air Vent Steam Return
Valves—Air Vent Radiator
Valves—Alarm Sprinkler
Valves—Automatic
Valves—Back Pressure
Valves—Back Water
Valves—Blow-Off
Valves—Check
Valves—Diaphragm
Valves—Dry Pipe Sprinkler Systems
Valves—Floating Tank
Valves—Flushing
Valves—Fresh Water
Valves—Fire Alarm
Valves—Flow
Valves—Hopper
Valves—Hose
Valves—Mixing
Valves—Needle
Valves—Pressure Regulator
Valves—Radiator
Valves—Regulating
Valves—Release
Valves—Safety
Valves—Sewer
Valves—Stop
Valves—Thermostatic
Valves—Vacuum Air
Vapor Heating Systems
Vaporizers—Steam
Vapor Heating System
Varnish—Bituminous
Varnish—Exterior Spar
Varnish—Floor
Varnish—Interior
Varnish—Pots
Varnish—Rubbing
Varnish—Spar
Varnish—Wax
Vats
Vault Doors
Vault Construction
Vault Equipment and Fittings
Vault Fronts
Vault Lights
Venetian Blinds
Veneered Doors
Veneers—Metal Surfaces
Veneers—Wood
Veneers—Screen
Veneers—Wood Panels
Ventilating Ridging
Ventilating Brick
Ventilating Equipment
Ventilating Fans
Ventilating Grilles—Hot Air
Ventilating Systems
Ventilating Registers
Ventilating Shades
Ventilating Windows—Steel
Ventilating Screens
Ventilation Locks
Ventilators—Dark Room
Ventilators—Kitchen Type
Ventilators—Mushroom
Ventilators—Roof—Revolving
Ventilators—Roof—Stationary
Ventilators—Store Front
Ventilators—Transom
Ventilators—Window
Vitreous Marble
Vitrified Tile
Wainscoting
Wall Anchors
Wall Board—Asbestos
Wall Board—Cane Fibre
Wall Board—Composition
Wall Board—Gypsum Fibre
Wall Board—Wood Core
Wall Board—Wood Fibre
Wall Board Fasteners
Wall Boxes—Wood Beams
Wall Brackets
Wall Cases
Wall Coping
Wall Construction—Hollow Concrete
Wall Coverings
Wall Faucets
Wall Finish
Wall Furring
Wall Hangers
Wall Lining
Wall Paints
Wall Paper
Wall Plates
Wall Plugs
Wall Registers—Hot Air
Wall Safes
Wall Sizing
Wall Ties
Wall Tiles
Wall Tints
Wall Ventilators
Wall Windows—Steel
Wardrobe Fixtures
Warm Air Furnaces
Warning Lights
Wash Stands
Wash Tubs
Washers—Automobile
Waste Chutes
Water Closets
Water Connections
Water Filters
Water Heaters
Water Heaters—Gas—Automatic
Water Heaters—Coil
Water Heaters—Electric
Water Heaters—Gas
Water Lifts
Water Meters
Water Paint
Water Pumps
Water Purification System
Water Regulators—Automatic
Water-Proofing Cement
Water-Proof Compound
Water-Proof Coverings
Water-Proof Flooring
Water-Proofing Paints
Water-Proofing Varnish
Water Softeners
Water Softening Equipment
Water Supply Systems
Water-Proofing Integral
Water-Proofing Membrane Method
Water-Proofing Paint
Water Tanks—Water Towers
Water Temperature Control
Weatherstrips
Weatherstrips—Casement Sash
Weatherstrips—Metal
Weather Vanes
Weighing Scales
Well Pumps—Deep and Shallow
Wheelbarrows
Wheel Guards
White Portland Cement
Winches
Window Casings—Sheet Metal
Window Adjusters
Window Blinds
Window Casings—Wood
Window Frames
Window Frames—Steel
Window Frames—Wood
Window Glass
Window Guards
Window Hardware—Adjusters
Window Hardware—Cacement Window
Window Hardware—Casings
Window Hardware—Chains
Window Hardware—Locks
Window Hardware—Sash Chains
Window Hardware—Screen Hangers
Window Sash and Trim
Window Shade Adjusters
Window Shades
Window Ventilators
Windows—Box Head
Windows—Balanced
Windows—Bronze
Windows—Casement
Windows—Casement—Solid Bronze
Windows—Casement—Solid Nickel Steel
Windows—Casement—Solid Nickel-Silver
Windows—Casement—Solid Copper and Nickel Silver
Windows—Coal
Windows—Cold Storage
Windows—Counter Balanced—Sliding
Windows—Double Hung
Windows—Double Hung—Nickel-Silver
Windows—Hollow Metal
Windows—Metal Covered
Windows—Pivoted
Windows—Reversible—Double Hung
Windows—Reversible—Plank Frame
Windows—Revolving Pantry
Windows—Solid Steel
Wire—Armored Cable
Wire Cloth
Wire Cloth—Black Finish
Wire Cloth—Galvanized
Wire Cloth—Pearl
Wire Cloth—Copper
Wire Doors
Wire Fencing
Wire Enclosures
Wire—Electric
Wire—Asbestos Insulated
Wire—Electric Bell
Wire—Electric Elevator
Wire Fencing
Wire Glass
Wire Glass Windows
Wire Gratings
Wire Lath
Wire—Lamp—Portable
Wire—Rubber Cover
Wire—Lead Encased
Wire Netting
Wire Partitions
Wire Railings
Wire Rope
Wire Rope Sheaves
Wire Screening
Wire—Slow Burning
Wire—Steel Armored
Wire—Telephone
Wire—Theater and Stage
Wire—Underground
Wire—Weatherproof
Wiring Diagrams
Wiring Fittings
Wiring Products
Wood Base Moulding
Wood Cabinets
Wood Capitals
Wood Carvings
Wood Columns
Wood Ceilings
Wood Doors
Wood Fillers
Wood Finishes
Wood Flooring
Wood Gauges
Wood Kitchens
Wood Lath
Wood Mantels
Wood Mats
Wood Mouldings
Wood Partitions
Wood Preservatives
Wood Screws
Wood Stains
Wood Stairs
Wood Trim
Wooden Tanks
Wooden Thresholds
Woodwork
Wrapping-Beam
Wool Deadening Felt
Zinc Flashing
Zinc Ornaments
Zinc Paint Paste
Zinc Products
Zinc Roofing

For Sources of Supply, See Classified Index, Pages 460 to 496

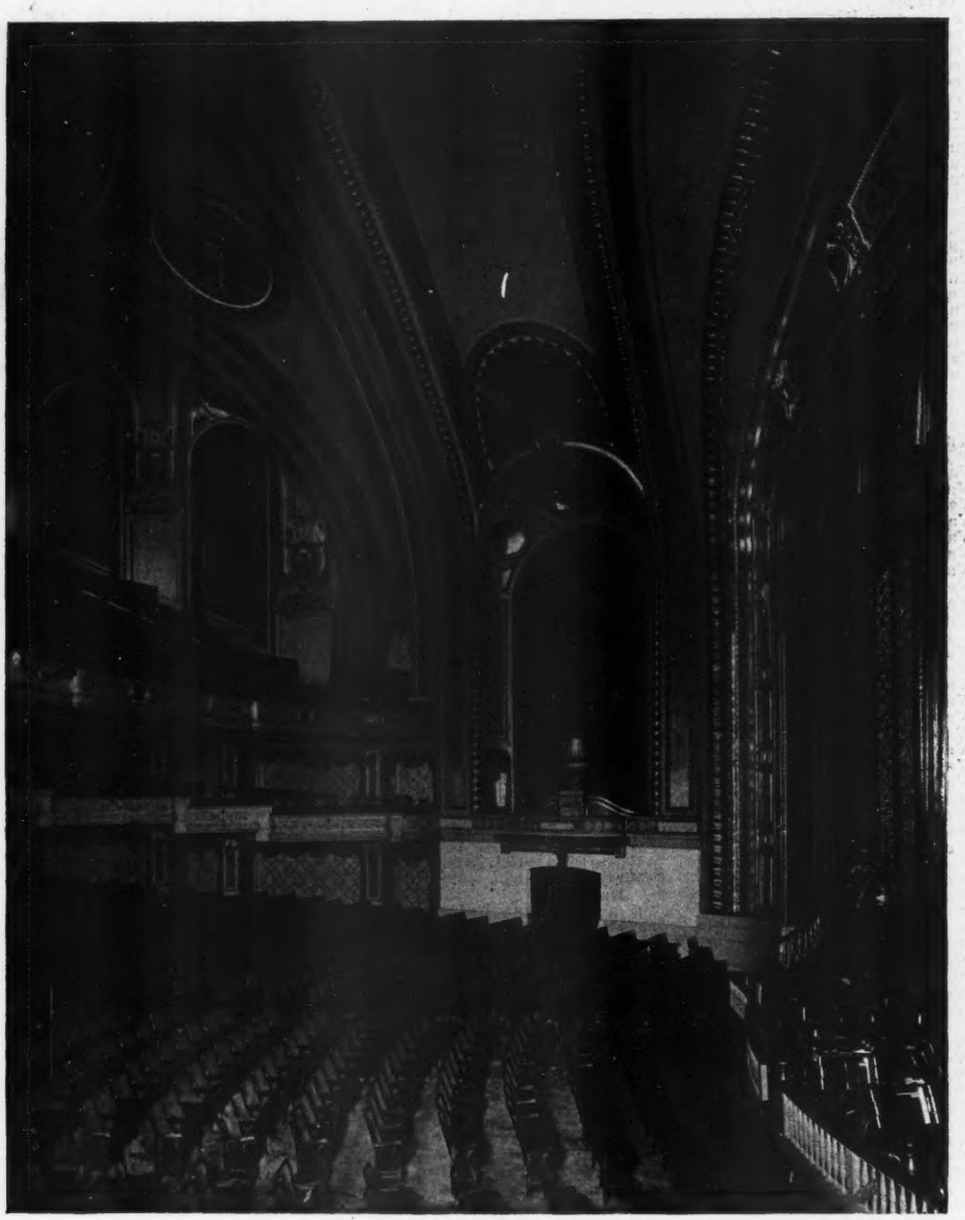
In the Realm of Moving Pictures Palatial Buildings Pay

Public Patronage Won by Safe, Luxurious Buildings, with Fine Finish, Equipment and Decorations

WHEN any of the stars of Hollywood are to entertain, the pictures are shown nowadays amid luxurious surroundings. Modern management finds it profitable to utilize to the full the skill of architect, engineer, builder and decorator. The standards of today are far beyond those of even a few years ago and it is natural to ask—how much farther can luxury go? Lobbies of marble with lofty vaulted ceilings, graceful columns, arches, ornamental plaster work and beautiful paintings greet the theater-goer.

Easy ramps or short flights of stairs lead to mezzanine or balcony. In the auditorium, beautiful chandeliers, lighting effects, painting and decoration, together with broad aisles and soft floor coverings, contribute to the feeling of luxury and charm. Lights—music—let the show go on! Not a column intervenes and from every seat there is unimpeded view of stage and screen.

The extremely wide spans in most modern theaters call for skillful engineering. Steel cantilevers or K-trusses support balconies and their many tons of live and dead load. Down in the basement, large volumes of fresh air are being forced into the building, washed, heated, humidified or cooled and blown by fans into the auditorium through tiny mushroom outlets under the seats. Concealed in the ceiling above, exhaust fans and ventilators are removing the vitiated air. Smoking rooms, ladies' rest and toilet rooms—even children's playrooms—are provided and there are luxuriously furnished promenades and lounges in which to while away an intermission.

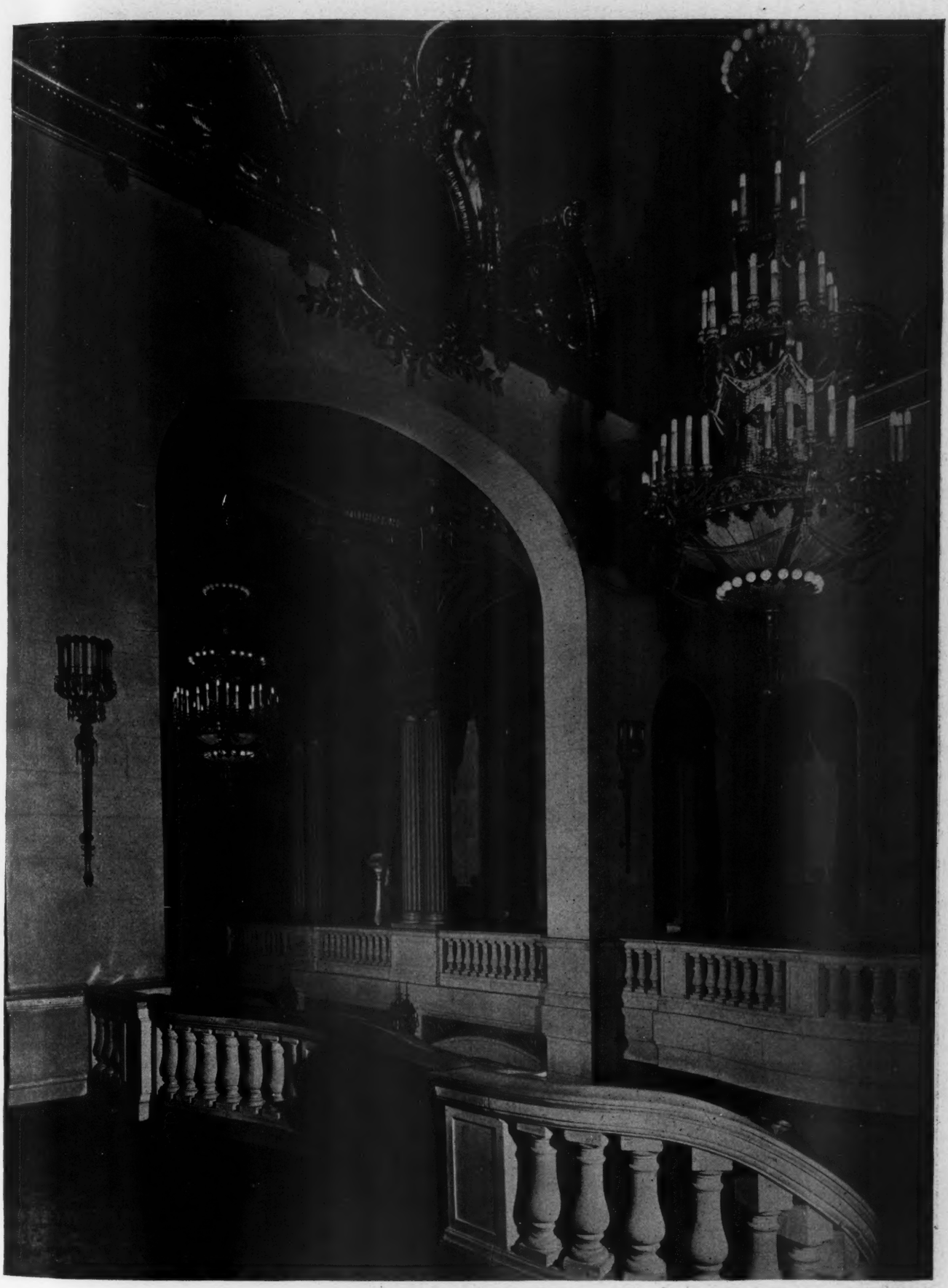


One of the Latest Fine Theaters Erected Is This Beautiful "Wisconsin" Theater, Milwaukee, Wis., Designed by C. W. and Geo. L. Rapp, Architects. This view shows the artistic decoration of the auditorium. Note the effect gained by the urn in the side arch backed by velvet drapery.

Many millions of dollars will be spent this year in the construction of theaters and places of amusement in the United States. Estimates vary all the way from $90,000,000 to $136,000,000. No city is too small to have its moving picture theater and obsolete buildings are rapidly being replaced by ultra-modern structures.

Fire-resitant building material is used throughout. The framing of steel is enclosed by concrete or tile. Stone carving, molded concrete decoration or architectural terra cotta enrich the faces of these buildings and marquises or canopies of ornamental iron work and glass extend from curb to entrance. Mosaic tile, faience, terrazzo and marbles of many kinds beautify theater lobbies.

Out of sight of the audience, but quite important to its comfort, are the swinging ventilators on the roof. These are provided with wind vanes so as to be always turned away from the wind and thus allow free exhaust and ventilation without interference with the heating or cooling systems in the house beneath. These ventilators



The Beauty of Columns, Vaulted Ceiling, Chandeliers and Plaster Decoration Is Revealed in This View of the Mezzanine at the Head of the Stairway from the Lobby of the "Wisconsin" Theater. Note the detail over the main arch and above the double column capitals seen through the main arch.

Graceful Architectural Line and Ornamentation Mark the Lobby, Stairway and Mezzanine of the "Wisconsin" Theater, Milwaukee, Wis.; Marble and Fine Masonry, Vases, Balustrades, Art Lighting Fixtures and Beauty of Decoration Are Noteworthy. The main arch of this lobby supports the balcony above.

are quite large and from six to a dozen are required on the roof of a good sized theater. Roof coverings are frequently graveled, built-up roofs of asphalt or tar and saturated felts. The roof deck itself may be of concrete, gypsum or some other fireproof material. The use of wooden roof decks over large theaters is not allowed in most cities.

The building industry will continue to profit by the efforts of promoters to outstrip each other in erecting finer theater buildings. As a result, the public is constantly being educated to new standards and theater buildings become obsolete rapidly. There is every evidence that the building of theaters will continue to be active for some time to come.

The Great Size and Seating Capacity of the "Wisconsin" Theater Are Clearly Shown by This Picture. The seating capacity is 3,000. Note the location of the projection booth above the balcony at the rear and almost at the ceiling level.

Some Idea of the Distance Spanned by the Steel Trusses Supporting the Balcony May Be Gained from This Close-Up of the Mezzanine Stalls. The grilles covering the ventilator outlets show plainly in this picture.

✣

Modern School Buildings

(*Continued from page 169.*)

ment, in keeping with the times, is becoming more elaborate and power woodworkers are being included in the most modern installations. A miniature machine shop is often a feature of manual training departments.

One of the best, though not the largest, of the school buildings erected in the last two or three years is the Dundee Community High School Dundee, Ill., which we have selected as typical of a well designed school, economically built but well designed and equipped in the most modern sense. The architects, Joseph G. and Ralph Llewellyn, are noted for successful designs, including all the latest school features, at a minimum of expense. The combined auditorium stage and gymnasium have been particularly well worked out.

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Report on Lumber Standards

AT a general conference of the lumber industry, held at the Department of Commerce, Washington, D.C., a committee reported in favor of continuing the present standard board at 25/32 inch, finished, dry; and the extra standard board at 26/32 inch, for another year. The Forest Products Laboratory, at Madison, Wis., is to study and review the whole subject and report a final composition of the dispute on this subject. The laboratory was advised that it was desirable, if possible, to adopt a single instead of a double standard.

Only minor changes were adopted in lumber standards and an attempt to extend the extra standard sizes was defeated. The study of odd and short lengths is to be continued under a committee of manufacturers, dealers and others interested in an attempt to solve the problem of this material before the next general conference next year.

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Apprentice School for Syracuse

THE latest addition to the list of large cities where courses in the building trades are being offered by the public schools is Syracuse, N. Y. The classes are under the control of employers, union men and the board.

Industrial Buildings Planned for Light and Efficiency

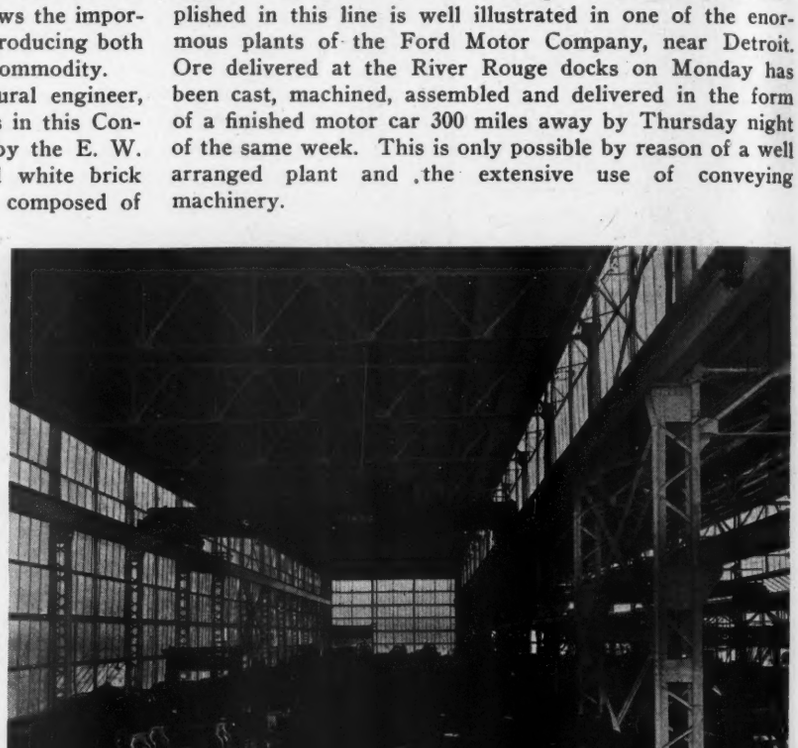
Plant of the E. W. Bliss Company, at Hasting, Michigan, a Model in Many Respects

A FINE industrial building practically enclosed in glass is illustrated herewith. This shows the importance of good daylight as a factor in producing both the best and the most of any manufactured commodity.

Frank D. Chase, the well-known architectural engineer, has achieved a fine looking group of buildings in this Consolidated Press Company plant, now owned by the E. W. Bliss Company, at Hastings, Mich. Glazed white brick were used for that portion of the walls not composed of glass. We doubt if any industrial buildings in the United States have as much daylight provided as in these buildings. Good daylight, of course, allows the workmen to do their work with greater ease and certainty and speeds up production. Steel sash, used most generously, make this fine day-lighting possible. Ventilating sash are installed both at the breathing level and also at the top where they are operated by special controlling devices.

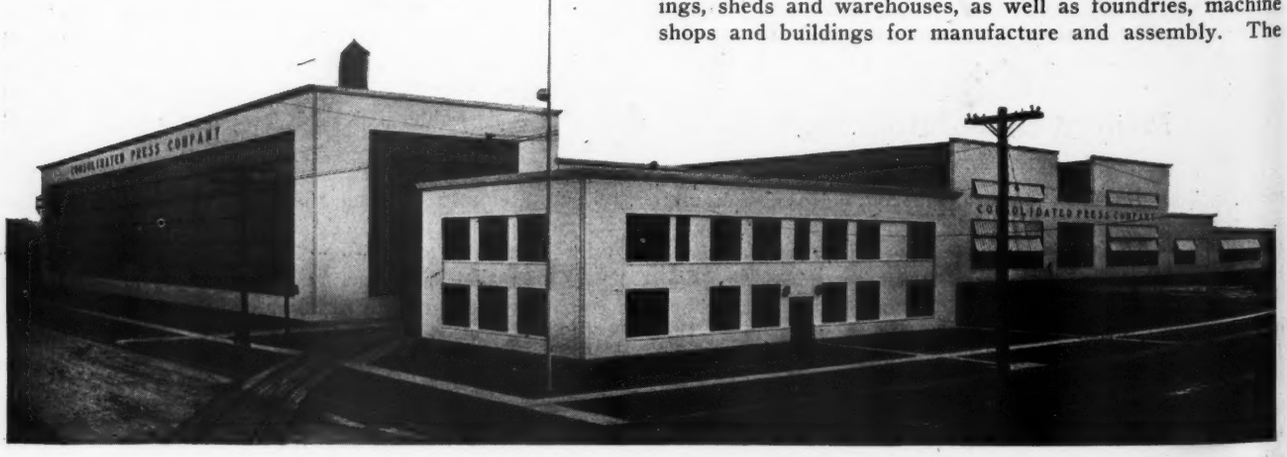
This building is strongly framed of structural steel—a type of construction almost universal in plants devoted to heavy manufacturing. Note the latticed steel columns, cross-braced in every sixth bay to carry the weight of the 50-ton overhead traveling crane. The roof is a wood deck carried on steel angle trusses and covered with built-up composition roofing, graveled for fire protection. The use of a wood deck overcomes the nuisance of condensation and drip in winter common to some types of roofs. On the other hand, roofings of metal, reinforced concrete tile, claytile, reinforced gypsum, etc., are highly fire-resistant and can be made condensation and drip-proof by proper insulation. Where the product is a poor conductor of heat, as with gypsum, no insulation is necessary.

In designing an industrial plant, an efficient arrangement of departments is essential, so as to prevent lost motion due to bad routing of material and excess handling. What can be accomplished in this line is well illustrated in one of the enormous plants of the Ford Motor Company, near Detroit. Ore delivered at the River Rouge docks on Monday has been cast, machined, assembled and delivered in the form of a finished motor car 300 miles away by Thursday night of the same week. This is only possible by reason of a well arranged plant and the extensive use of conveying machinery.



This Glass Enclosed Assembly and Machine Shop Receives Light from All Sides. The structural steel, which carries heavy loads, is so designed as to produce the minimum light obstruction.

Structural steel, reinforced concrete, brick, concrete masonry and almost every type of building material is used in industrial plants, most of which have office buildings, sheds and warehouses, as well as foundries, machine shops and buildings for manufacture and assembly. The



Built of Glass, Steel and White Glazed Brick, This Group of Manufacturing Buildings Is Not Only Highly Efficient, but Also Presents a Pleasing Appearance. Frank D. Chase, Inc., Architectural Engineers.

all-steel type of warehouse is coming into increasing use and, of course, is non-inflammable. Often these buildings consist merely of structural steel frames sided and roofed with corrugated or plain sheet steel.

Builders erecting industrial plants need an exceptionally complete equipment of tools and machinery. There is, however, such a complete range of these buildings, in size, type and equipment, that there is work on them for almost every sort of builder and contractor, as well as architect and engineer.

In no other section of the building field is there such a wide variety or so many different types as with industrial buildings. They range from immense plants covering many acres of ground—for instance, a big steel plant—down to a single building, such as a steam laundry. In general, they are divisible into two general divisions—heavy and light manufacturing.

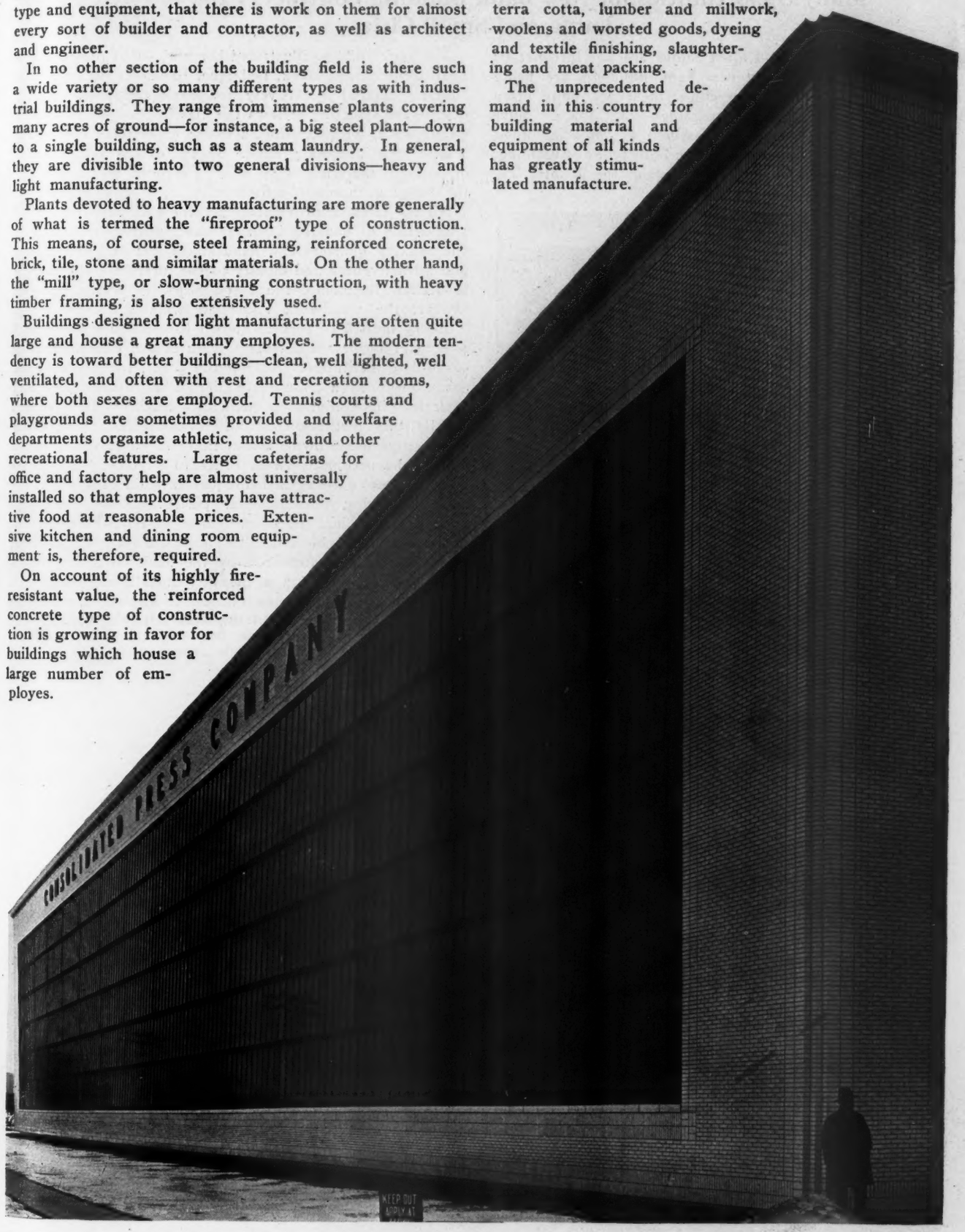
Plants devoted to heavy manufacturing are more generally of what is termed the "fireproof" type of construction. This means, of course, steel framing, reinforced concrete, brick, tile, stone and similar materials. On the other hand, the "mill" type, or slow-burning construction, with heavy timber framing, is also extensively used.

Buildings designed for light manufacturing are often quite large and house a great many employes. The modern tendency is toward better buildings—clean, well lighted, well ventilated, and often with rest and recreation rooms, where both sexes are employed. Tennis courts and playgrounds are sometimes provided and welfare departments organize athletic, musical and other recreational features. Large cafeterias for office and factory help are almost universally installed so that employes may have attractive food at reasonable prices. Extensive kitchen and dining room equipment is, therefore, required.

On account of its highly fire-resistant value, the reinforced concrete type of construction is growing in favor for buildings which house a large number of employes.

Statisticians, this year, are commenting upon the renewed building activity developing in the industrial field. Gauged by the levels of employment reported by the U. S. Department of Labor, the greatest increase in activity is being shown in the following lines: The tobacco industry, the automobile industry, paper box manufacture, newspaper, book and job printing, brick, tile and terra cotta, lumber and millwork, woolens and worsted goods, dyeing and textile finishing, slaughtering and meat packing.

The unprecedented demand in this country for building material and equipment of all kinds has greatly stimulated manufacture.

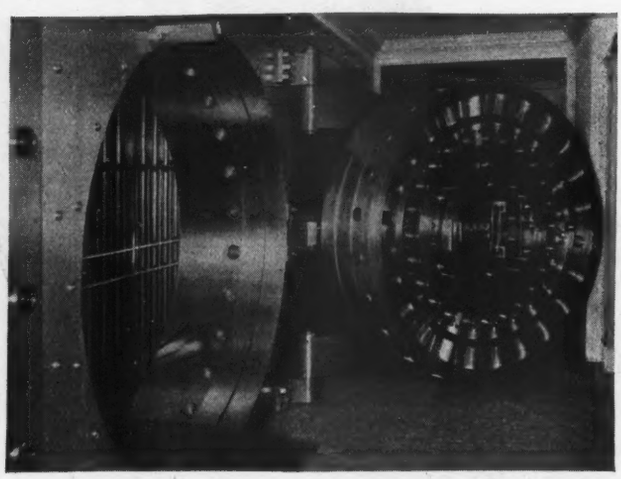


There Are Over Two Thousand Sheets of Glass in This One Building of the Group at Hastings, Mich., Owned by the E. W. Bliss Company. Perfect daylighting enables the men to turn out more and better work.

The Nation's Prosperity Reflected in its Bank Buildings

Many Opportunities for New Bank Building Contracts Exist in Both Large and Small Cities

THE banks of the United States are in a prosperous condition and many new bank buildings are being erected. In the large cities, these are quite often skyscrapers with extensive rentable office space. Such structures are more properly classified as office buildings. Many opportunities for contracts on both types of buildings exist in large and small cities throughout the country.



This Enormous Steel Door Is Surely Burglar-Proof. It safeguards the valuables of depositors in the Union Trust and Savings Bank, Dubuque, Iowa. The weight of the door alone is 32,000 pounds, or 16 tons.

The bank building illustrated herewith—that of the Union Trust and Savings Bank, Dubuque, Iowa,—is typical of the building erected exclusively for bank purposes. In its design, the structure follows the classic lines of the Italian Renaissance, with exterior in matte glaze terra cotta over a base of Minnesota granite. In the design and selection of building material, every effort has been made to make the building thoroughly fireproof.

All the latest improvements for the safe and economical transaction of banking business have been incorporated in the banking quarters and handsome finish and decorations add attractiveness and dignity to the interior. The marble is Italian Bottocino, the metal work of finely wrought bronze, the woodwork American walnut.

Every branch of service known to modern banking and a number of new department features are offered by this up-to-date institution. Among the latter, the management takes pride in a Home Building Plan inaugurated and operated in conjunction with its Savings Department. While this institution at all times financially assisted prospective home owners, something of an effective nature had to be accomplished in order to overcome the shortage of homes existing in Dubuque, as it did throughout the country during the after-war period.

Under this plan, the home builder is required to own a lot and a reasonable amount of cash to apply on building, the balance being furnished by the bank on a first mortgage loan, payable on a monthly installment plan.

The borrower obligates himself to deposit monthly in the Savings Department of the bank not less than one per

Exterior View of the Union Trust and Savings Bank Building, Dubuque, Iowa, Designed by Weary and Alford, Architects, Chicago.

Main Banking Room of the Union Trust and Savings Bank, Dubuque, Iowa. Note the lofty ceilings, the fine lighting, both daylight and artificial, and the handsome bronze and plaster work. The marble partitions and the tile flooring add permanence and dignity.

cent of the amount of his loan, the bank paying its regular interest rate on such deposits. On January 1st and July 1st, the aggregate of such deposits, together with interest earned, is transferred from savings account onto the loan, the amount of interest being covered first, while balance is applied on principal of loan. The interest payment is reduced at every six months settlement, but the amount applicable on principal is automatically increased every period. The plan has its distinct advantages to both bank and borrower and has proven a boon to several hundred families to date.

Thirteen thousand people are said to have visited this building on its opening day. The design is by Weary and Alford, architects, Chicago, the well-known specialists in bank design.

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American Architecture

"EVOLVING an American Domestic Architecture" will be one of the topics at the general sessions of the Realtors' convention to be held at Detroit, Mich., June 23-26.

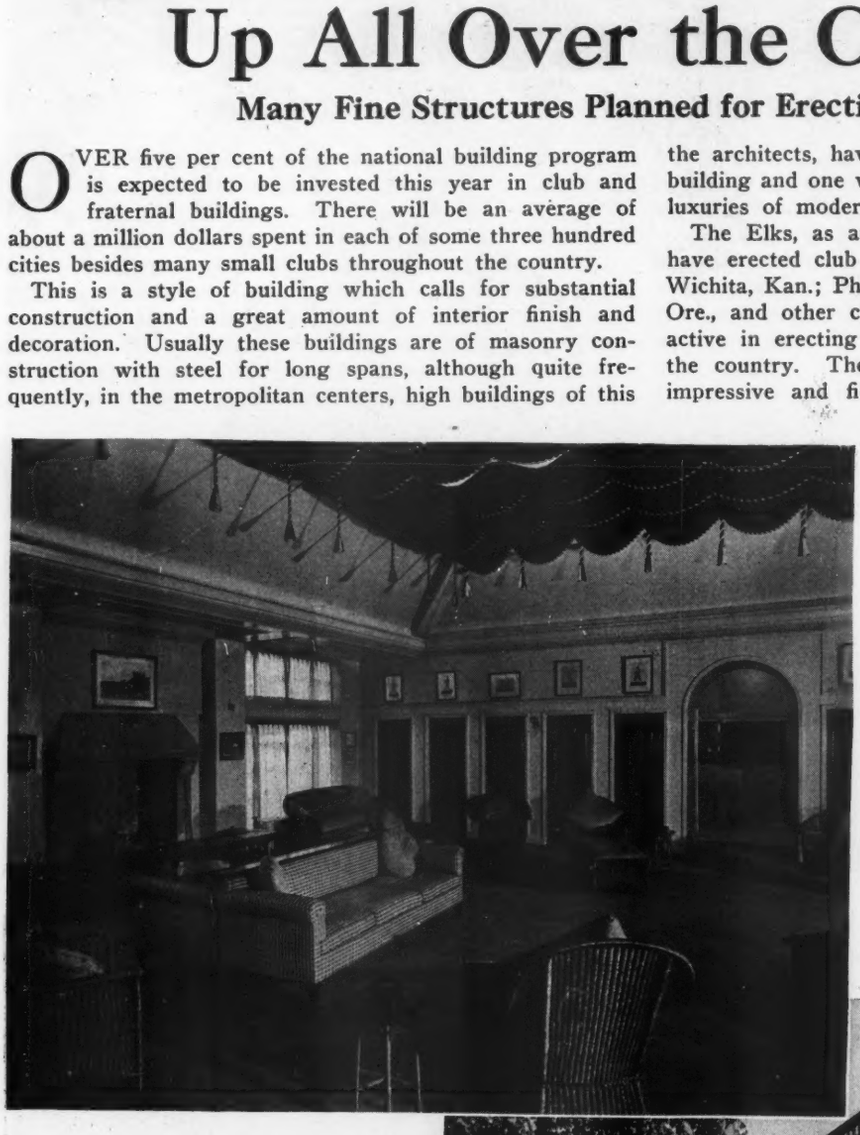
Private Office of the President of the Bank. Note the rich effect gained by the paneling of American walnut.

Splendid Club Buildings Going Up All Over the Country

Many Fine Structures Planned for Erection This Year

OVER five per cent of the national building program is expected to be invested this year in club and fraternal buildings. There will be an average of about a million dollars spent in each of some three hundred cities besides many small clubs throughout the country.

This is a style of building which calls for substantial construction and a great amount of interior finish and decoration. Usually these buildings are of masonry construction with steel for long spans, although quite frequently, in the metropolitan centers, high buildings of this type are erected of structural steel with curtain walls and the buildings equipped with high speed elevator service.



Locker Lounge of the Racquet Club, Chicago. A glimpse of the lavatories can be seen through the archway, also the dressing rooms at the end.

There is usually considerable rich wood paneling in these buildings and ball room floors which must be carefully surfaced. Fine terra cotta, architectural iron work and stone carving embellish the outside of these buildings and the interior fittings and decorations are luxurious. Usually there is a great amount of the finest type of plumbing and fixtures, showers, swimming pools, bowling alleys, billiard and card rooms, gymnasiums, kitchens and dining rooms.

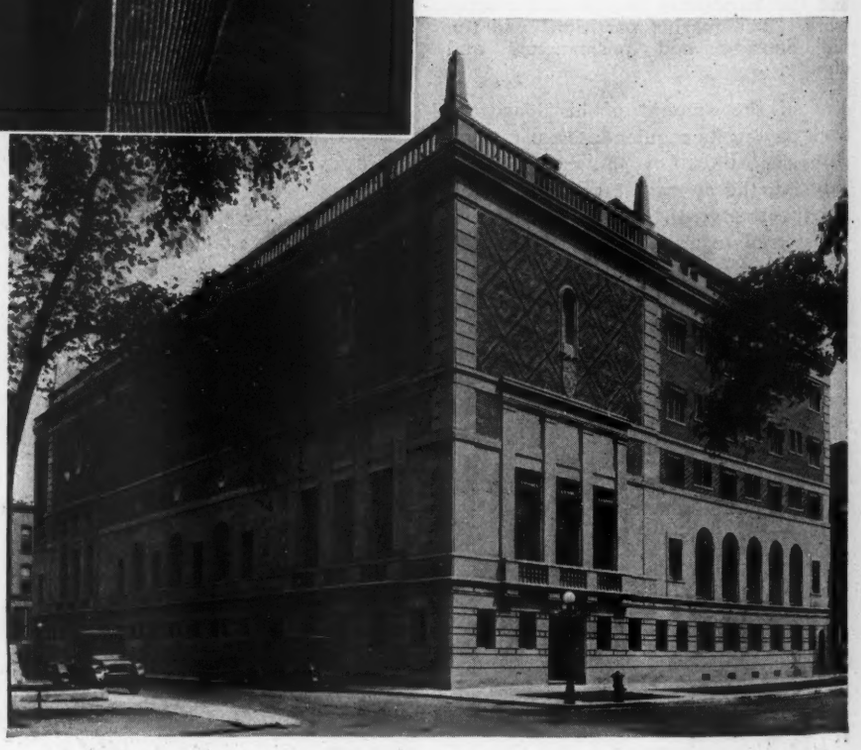
The Racquet Club, Chicago, illustrated on this page, is a fine example of modern clubhouse architecture. Messrs. Rebori, Wentworth and Dewey, the architects, have designed in this structure a beautiful building and one which provides most of the comforts and luxuries of modern club life.

The Elks, as an organization, are erecting or recently have erected club houses in many cities; for instance, in Wichita, Kan.; Philadelphia, Atlantic City, N. J.; Portland, Ore., and other cities. The Masonic order is also quite active in erecting buildings at various points throughout the country. The new Union League Club will be an impressive and finely equipped structure, also the new Standard Club, both in the Loop District of Chicago. The latter has been designed by Albert Kahn, architect, of Detroit.

The new clubhouse for the Pennsylvania Athletic Club at Philadelphia, now under construction, is to cost $3,600,000 and is expected to be ready for occupancy by next November. It is being erected by the Thompson-Starrett Company, well-known builders.

Golf, Tennis and Country Clubs

The great and growing popularity of the game of golf is revealed in the fact that there are now nearly 3,500 golf clubs in the United States. New clubs and buildings are constantly being added. The building of clubhouses for golf, country and tennis



An Exterior View of the Racquet Club, Chicago; Rebori, Wentworth and Dewey, Architects. Racquets is an indoor game which should not be confused with tennis. This handsome building contains living quarters, clubrooms and courts.

clubs is, therefore, an important item in the annual building budget.

Extensive grounds, courses and landscaping are important features of these clubs, but the buildings themselves are frequently quite extensive and costly, with elaborate equipment and furnishings. Such clubs practically all have dining rooms, grill rooms, kitchens, lounge and billiard rooms, ladies' rooms, locker rooms, showers and, sometimes, swimming pools. Separate caddy shelters are usually provided.

Valeting rooms have drying cabinets, wardrobes and sinks. A separate wing is usually required to house the help, with the kitchen located on the lower floor. Complete equipment of ranges, steamers, steam tables, refrigerators, mixers and beaters, dishwashhers and cooking utensils is required.

Inasmuch as golf and country clubs are often in isolated locations, water supply systems with pumps, tanks and filters, are frequently necessary. For the same reason, independent sewage disposal systems must be installed, in many cases. In some clubhouses, bedrooms are provided for members' use. In country clubs where riding to hounds is a feature extensive stables are necessary.

Serious fires have occurred in a number of golf and country club buildings and designers are showing an increasing tendency to use fire-resisting building materials where the appropriation will permit. Walls and roof coverings of a non-inflammable nature are desirable even where wood framing is used and fire fighting apparatus should be installed in every case, including pumps, hydrants and hose, elevated tanks to supply presure and a liberal supply of chemical fire extinguishers.

Quite a few golf and country clubs are used only during the warm weather season in the North and during the winter season in the South. These are usually of the "bungalow type" and here the fire risk is even greater than in buildings used the year round. It would, therefore, seem logical to use every possible safeguard in these buildings against fire, which may be caused by lightning, spontaneous combustion or intruders.

The question of ventilation in a golf or country club is quite important, in the locker rooms, kitchens, dining rooms and lounges. Ventilating fans can be used to advantage in some of these rooms. Casement windows are quite appropriate for buildings of this type, as they provide the maximum window opening. They should, of course, have satisfactory and durable window adjusters, which will stand hard and frequent service.

Window and door screens are also quite important, to bar the fly and mosquito and to make these clubhouses comfortable during warm weather. Every door and window opening should be screened with the most durable type of screens and wire cloth. When used in the winter, these buildings should be thoroughly weatherstripped with metal or combination weatherstrips.

To those who believe that recreation and outdoor sport are not only pleasant but desirable features of modern life, the large and growing expenditures for grounds, buildings and upkeep of these clubs will seem amply justified. Let us hope that the benefits of these clubs will be extended to an increasing number of our population for wholesome exercise and recreation.

Main Lounge of the Racquet Club, Chicago. The beamed ceiling and wood paneling of this room are certainly very handsome and the furniture is of the substantial, comfortable type, for "solid comfort." This room faces the corner and has good light from windows on both streets.

Cloistered Court a Feature of This Community Church

MAREAN AND NORTON, Architects

A Glimpse Through the Arcade of Denver's Community Church Showing Open Air Auditorium. Seats are placed out here on pleasant summer Sundays.

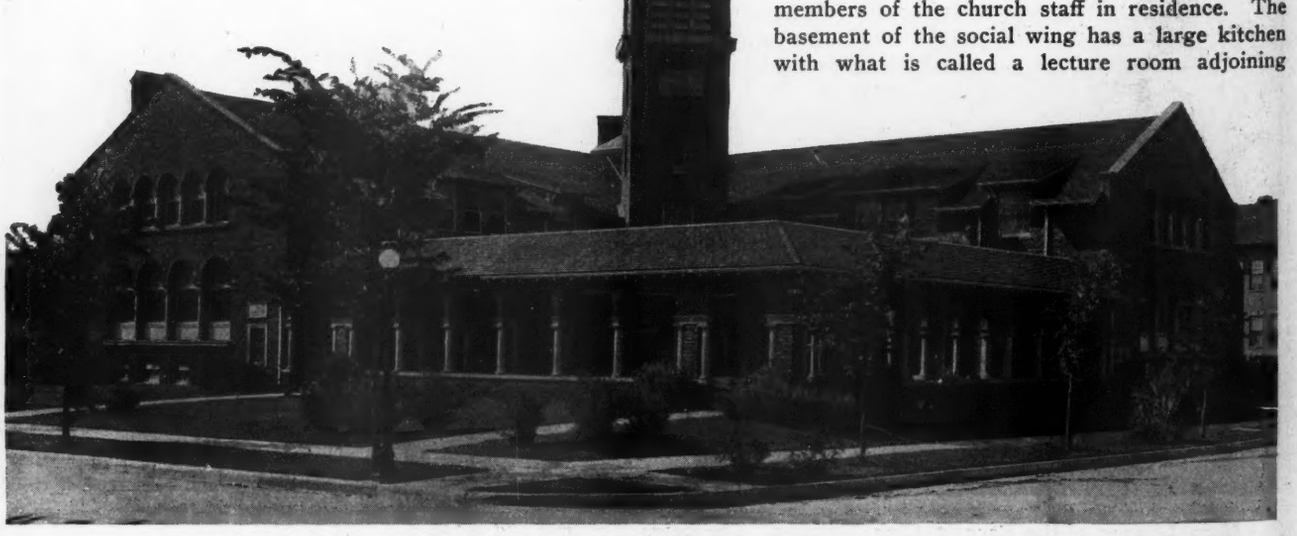
A SUMMER auditorium in a cloistered courtyard surrounded by beautiful architecture reminiscent of Lombardy, Italy, is a feature of Denver's popular community church in the Washington Park suburban district. Wings on each side of the main auditorium house the Sunday school and social rooms, while lecture and gymnasium rooms, as well as a kitchen, are located in the basement.

Members of more than seventeen denominations unite in this church in happy co-operation. In fact, it has proven so popular that already the attendance exceeds the accommodations and plans for enlargement are now being drawn.

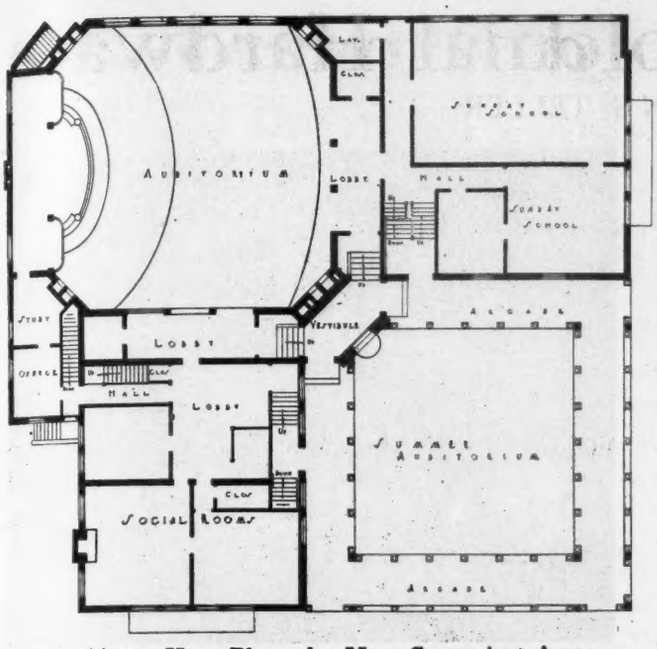
The structure in design is Lombard Italian with the small dome of the central tower reflecting Arabic influence in Sicily. The exterior is dark red tapestry brick laid with raked back joints. Sills, cloister columns, coping and all other trimmings are terra cotta. The footings and basement floors are cement. Other floors and construction throughout is of frame with steel beams over the auditorium. The roof is shingled.

The ground plan is "L" shaped, one wing housing the Sunday school and the other for social activities, with the church auditorium connecting the two. The main structure is squared out by an arcade which is very much like an old world cloister. The inner court so enclosed may be used as an open-air summer auditorium.

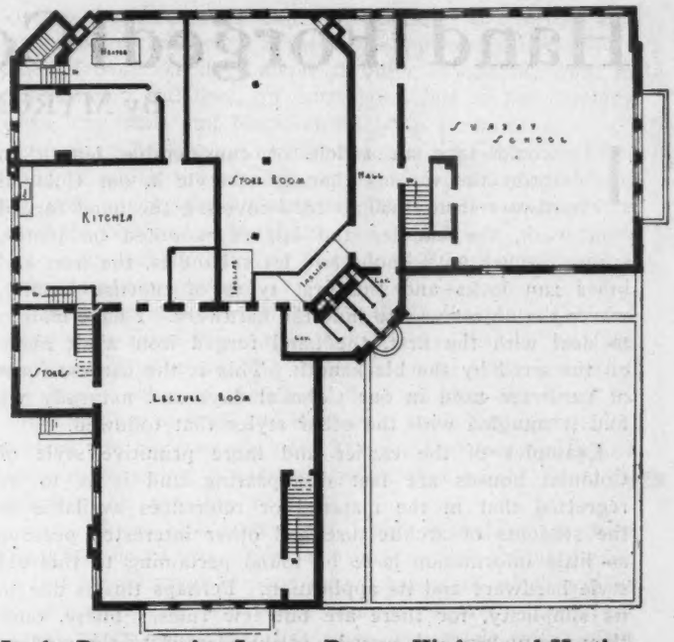
The departmentalized activities of the Sunday school employ a large room in the basement for the primary students, with rooms for the older classes on the main and second floors. The social wing on the ground floor contains a lobby that serves, too, for a library and an informal reception room. The large parlors adjoining are most home-like with their pretty curtains and attractive wicker furniture. One of these has a fireplace. The church office with the adjoining pastor's study is at the end of a short hall on the extreme west side of this wing, the latter connecting with the rostrum of the auditorium. On the second floor are a number of small social rooms and two small apartments for members of the church staff in residence. The basement of the social wing has a large kitchen with what is called a lecture room adjoining



An Exterior View Showing the Graceful Architecture of Washington Park Community Church, Denver, Colorado.



The Architects Have Planned a Most Convenient Arrangement of Auditorium, Sunday School and Social Rooms.



In the Basement Are Lecture Rooms, Kitchen and Heating Plant. Lectures are secular as well as religious.

which serves many purposes. It is in turn a dining room for banquets and social functions, a class room, gymnasium, and used for basket ball games. It is an audience room, too, for the weekly movie program. As the films offered are first class, this feature of the church program draws a large attendance.

The church auditorium which has a seating capacity of about six hundred is a handsome room distinctly Colonial in its simple treatment. The motive is Doric with pilastered walls combined with triple-arched openings two stories in height. The color scheme is pale tan for plastered walls and trim with cherry for pews and railings of altar, rostrum and lobby balconies. The balusters of these railings are painted an ivory tone. The glass of windows and skylight is pale amber. The heating is by steam with ventilating flues from all the main rooms. The plumbing throughout is of the best. The cost of this church when built was $60,000, or about twenty-five cents a cubic yard. Duplication cost today would be about $120,000.—Theodore M. Fisher.

Lawn and Shrubbery Add to the Attractiveness of Arcade and Court. The main auditorium, shown in the lower picture, seats six hundred people but is soon to be enlarged. The membership is now 1,000 and growing. Note the casement windows in this auditorium and the ample light and ventilation which they afford.

Hand Forged Colonial Hardware

By MYRON S. TELLER

IT would take an article of considerable length to describe the various changes of style in our Colonial hardware from 1650 to 1850 covering the hand forged iron work, the handles and latches mounted on plates, spring latches with knobs and lever handles, the iron and brass rim locks and the first types of mortise latches, where the object was to hide the hardware. I have chosen to deal with the first, the hand forged iron work made on the anvil by the blacksmith. This is the earliest form of hardware used in our Colonial days and naturally we find it mingled with the other styles that followed.

Examples of the earlier and more primitive style of Colonial houses are fast disappearing and it is to be regretted that in the material or references available to the students of architecture and other interested persons so little information is to be found pertaining to this old style hardware and its application. Perhaps this is due to its simplicity, for there are but few rules. These, once they are understood, may be easily adapted to the modern construction of frames and doors expressing the same quaint touch and giving good services as did the old.

The hardware fitments for the house were not of first importance in the Colonial blacksmith's trade, yet the workmanship and finish on old examples of hardware and household utensils is evidence of his pleasure in showing his skill in this branch of his craft. His ingenuity in fashioning a hinge from an old worn tire iron and the forging of other odd pieces into a variety of household articles are interesting proof of that skill.

Fig. 1. A Typical Old Colonial House Which Was Recently Restored. It is equipped throughout with hand forged hardware, wherever pieces of the original hardware were missing, new pieces were made to match perfectly.

Fig. 2. Hall in an Old, Stone Colonial House in Ulster County, N. Y. Here is a fine example of the Colonial stairway, wide board flooring and heavy beamed ceiling. The top section of the Dutch door is open, showing the drop handle, while the lower half shows the inside latch and strap hinges. The door under the stairs shows the use of H-L hinges.

Fig. 3. This Door Is Fitted with a Latch with the Handle on the Outside. The small plate above covers a modern key cylinder. Strap hinges and lag pins can be seen on the shutters. Long iron hooks fastened to the sills hold the shutters open. Mud scrapers are formed in the iron hand rail at the bottom step on each side.

For those who may not be so intimately acquainted with the style of Colonial house in which this iron work was used, it may be of interest to give a description of these houses. Some are still to be found in the early settled towns and villages and occasionally we come on others in unexpected places. In some sections stone was used largely; in others they were mostly of frame and again we find localities with both stone and frame houses. They were more often built one and a half stories high.

The wooden buildings were framed of heavy timbers, mortised and tenoned and fastened together with wood pins; little iron was used in this part of the work. The window and door frames were solid oak, also framed together at the corners and fastened with wooden pins. Even the floor boards were often pinned down with wooden pegs.

Interior views of such houses are shown in Figs. 1 and 2. Here we find the painted floors of wide hand-planed boards of varying widths. The ceilings are low, often not over seven feet high, the boards of the floor above forming the ceiling for the room below. These boards are supported on heavy hand-hewn timbers, spaced four or five feet apart, the ends resting in the stone wall or if in a frame house, on the wood girt which often projected beyond the plaster of the side walls. If the house was of stone, the ends of several beams would be anchored through the wall with an iron of quaint design showing outside. Sometimes these anchors were in the form of numbers recording the date of building as in Fig. 6 of wall irons.

The fireplaces in these houses were an important feature, especially those in the kitchens. They were built wide and deep, arched high with a brick or a wood lintel over the opening. Fire wood was plentiful and easy to obtain and no doubt this was one reason for their being built of more generous dimensions than most of the fireplaces in the old country. The kitchen fireplaces often had ovens built in at one side and huge smoke chambers. Some of the smoke chambers were reached from the floor above through an opening built in the chimney and here, on cross poles laid in the chimney walls, the hams and bacons were hung to cure.

A cross pole of wood or iron supported the large trammel irons to which the smaller pot hooks were hung, to hold the pots and kettles. Other fireplaces had iron cranes to hang the pots and swing them over the fire.

In such surroundings the hand-forged hardware found a companionable setting.

The doors, shutters and cupboards in the early Colonial work were fitted flush with their frames, that is, the face of doors or shutters, and at least two to three inches of the frame were on the same plane so that the strap of hinge and bar of latch and bolt could apply flat against this surface and lap over the joint between the door and frame without requiring a bend or offset that would be more difficult and exacting to fit.

Figs. 13 and 15 illustrate this, which is perhaps the most important detail to consider in using the Colonial hardware, in fact for all types of hand-forged hardware which applies to the surface of doors and frames. There were exceptional cases where the hardware was made with offset to meet special conditions, but in dealing with this I shall describe and illustrate the more usual way I have found these applied.

The first doors and shutters used were made of hand-sawed and planed boards fastened to cross battens with hand-made nails. They were hung on strap hinges which were also fastened to the boards and batten with nails clinched on the opposite side. The hinge rested over the hinge pin or gudgeon, the spike of which was driven into the heavy frame of the door or window made of solid timber as before described.

The door or shutter was set in a rabbet cut in the frame so as to finish flush with the frame or casing and the

Fig. 4. A Batten Door in the Old Van Buren House, Kingston, N. Y., Showing the Use of Strap Hinges and Latch.

Fig. 5. Typical, Six-Panel, Colonial Butt and Bead Door with H-L Hinges and Latch. This door is paneled on one side only.

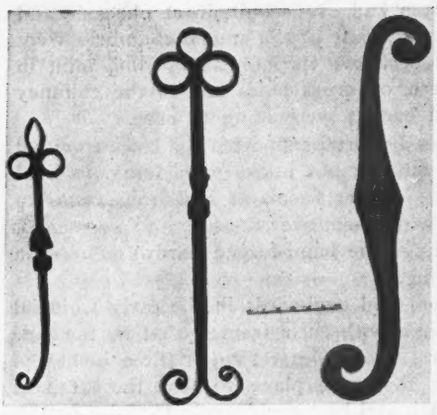


Fig. 6. Chimney or Wall Anchors, the One at the Left Was Used to Form the Figure One of the Date 1620 When the Building Was Erected.

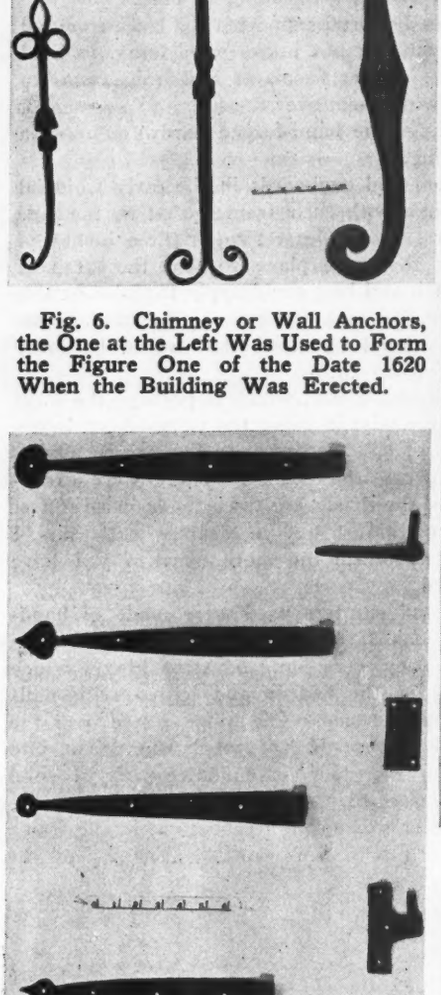


Fig. 7. Strap Hinges and Three Types of Hinge Pins, from Top Down: First, a Lag Pin or Gudgeon; Second, Hinge Pin Mounted on Plate; Third, Pin with Plate to Mortise Into Jamb at edge of Door.

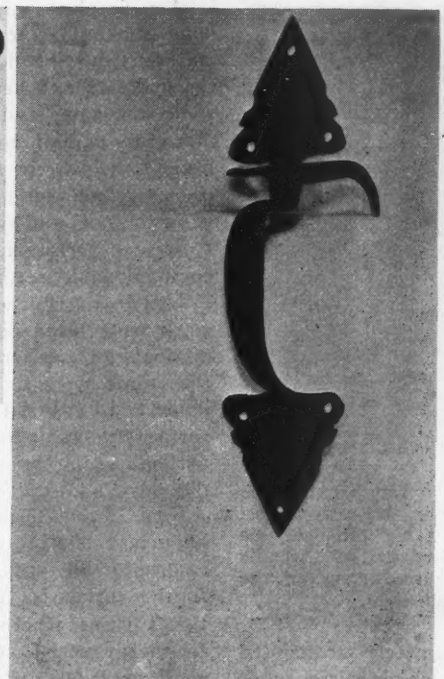


Fig. 8. Reproductions of an Old Pattern, Top Thumb Latch Handle with Pine Tree Design, Bottom—Latch Bar with Keeper and Guide Mounted on Plate. The latch bar was usually set with a slope or cant which made it ride more easily over the nose of the catch pin.

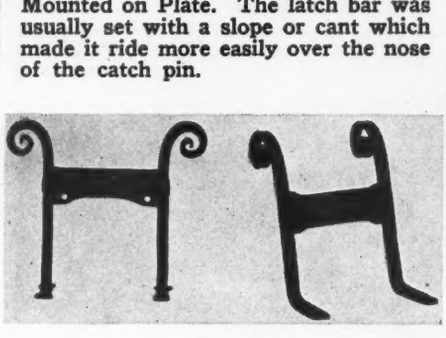


Fig. 9. Reproductions of Mud Scrapers from Old Patterns. These have holes for nailing to the step while others were designed to set into masonry.

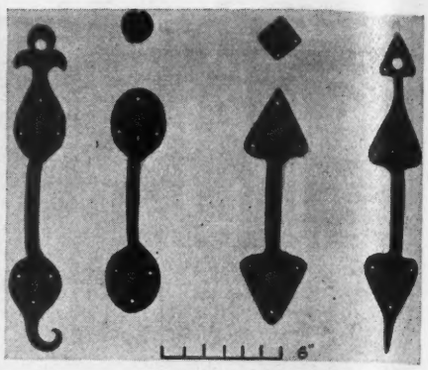


Fig. 10. Adaptation of Old Door Latch Handles to Assemble with and Operate a Modern Cylinder Front Door Latch. The top of the outside handles forms the escutcheon for the key cylinder.

Fig. 11. Types of Old Dutch Door Latches and the Assembly of the inside latch.

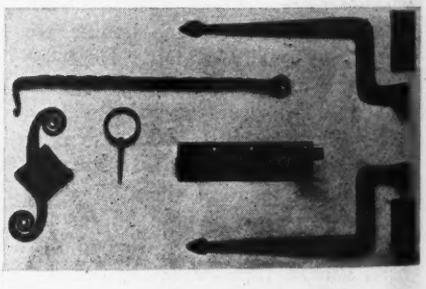


Fig. 12. Shutter Hardware, Angle Hinges, a Hold Back, Hook, Pull Ring and Slide Bolt.

hinges and latch were applied to the swing side. Fig. 4 is an example of the typical Colonial batten door and its hardware. On these the strap hinge was used largely and is best suited as it helps to reinforce the battens in holding the boards together. The strap hinge was used to some extent on paneled doors, especially outside doors and shutters. Fig. 3 illustrates this. Fig. 7 shows a variety of strap hinges and three types of hinge pins of which the spike pin is the older and best form. The pin mounted on the plate is a form which screws to the surface of the frame. The other, a mortise pin, was not so commonly used.

Fig. 13 shows a modern adaptation of old style hardware, strap hinges and latch, while Fig. 15 shows the details for applying the hardware to doors and windows.

On the inside paneled doors the H and H L hinges were used as in Fig. 5. On outside paneled doors angle straps were used as well as the straight strap, as can be seen in Figs. 1 and 2. H and H L hinges of various forms were used on the doors of cupboards.

The latch with a thumb lift handle was the most common type used—on the inside doors of which the earliest form had a latch with staple guide and spike catch pin, as shown in Figs. 4, 5, and 15.

Figure 8 shows the design of the door handle and latch while Fig. 10 shows thumb latch handles adapted to operate a modern mortise front.

On the entrance door today it is desirable to have an easy means for locking and unlocking from the outside of the door, and this may be done in two ways: the first and best is to use the old style latch and handle and above this provide a mortise cylinder lock with dead or spring bolt operated from the outside by a key and inside by a turn knob, the key cylinder to be fitted with a

hand-wrought iron escutcheon plate outside and a wrought iron thumb turn inside. In this way the modern hardware is inconspicuous as in Fig. 3.

Another way is to use a mortise cylinder front door lock with a latch trip to be operated with a wrought iron thumb lift handle on each side. The cylinder and turn knobs can be applied as in the other case, or the ends of the handles may be fashioned to provide an escutcheon for the key cylinder as in Fig. 10.

Another type of latch was operated by a drop handle of which Fig. 11 is an example. These are usually found on the Dutch door which is built in two halves and fitted with one of these drop handles near lower edge of the upper half. A spindle looped over the handle passed through the door and at the end of spindle a cam was fitted to lie under the bar of the latch, one end resting in the latch guide. A twist of the handle raised the latch and disengaged it from the catch pin. After the upper half was opened, one could reach over and lift the latch of the lower door from the inside.

A typical example of such a door with the original hardware as applied can be seen in Fig. 2. The bolts for these were made of a round bar of iron with a handle fashioned in the middle. Two loop staples held this to the door and a third keeper staple was driven into the log frame. (This style of bolt may be made with loops to nail or screw against the face of door if desired.) Little hardware showed on the outside of these doors other than the drop handle which also served as a knocker.

At one side of the doorstep a mud scraper was set in the stone or fastened to the wood steps, sometimes one at each side, a reminder for those who entered to scrape their muddy boots. Fig. 9 shows two designs.

The shutter hardware is found equally interesting. Hinges were of much the same shape as used on doors and hung in the same manner on iron pins or thumbs driven into the solid frames. We also find the hinge pins used, mounted on a plate. Angle hinges are often found on paneled shutters.

Fig. 13. **Here Is a Modern Adaptation of the Hand Forged Iron Strap Hinges, Latch and Bolt, Used on the Entrance of a Cottage at Woodstock, N. Y.**

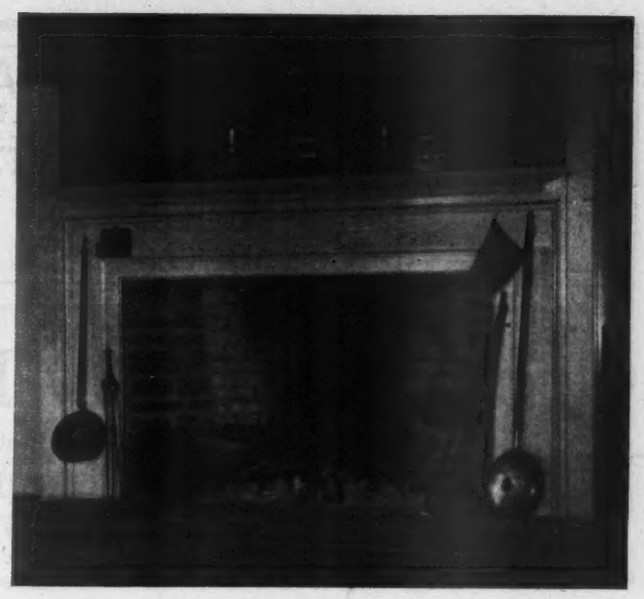


Fig. 14. Fireplace with Utensils of Wrought Iron Including Skillet Hanging at the Side, Crane with Pot Hooks Holding the Kettle, Fire Tongs and Andirons.

The shutters were fastened with a small hook to a pin driven in the sill and locked together with a wood bar dropped in irons; later slide bolts were used and a ring pull was placed on the shutter that swung in last. Long hooks held the shutters open. These were fastened to the shutters or sill, see Figs. 3 and 12.

No doubt the fireplace afforded the greatest outlet for the craftsman to display his skill in fashioning the pot hooks, trammel irons, cranes, oven doors, fire dogs, pipe and fire tongs, trivets and toasters and many of the cooking utensils such as forks, ladles, skewer sets, skimmers, skillets, griddles. Examples of these express a delicate sense of proportion in their design and exquisite finish.

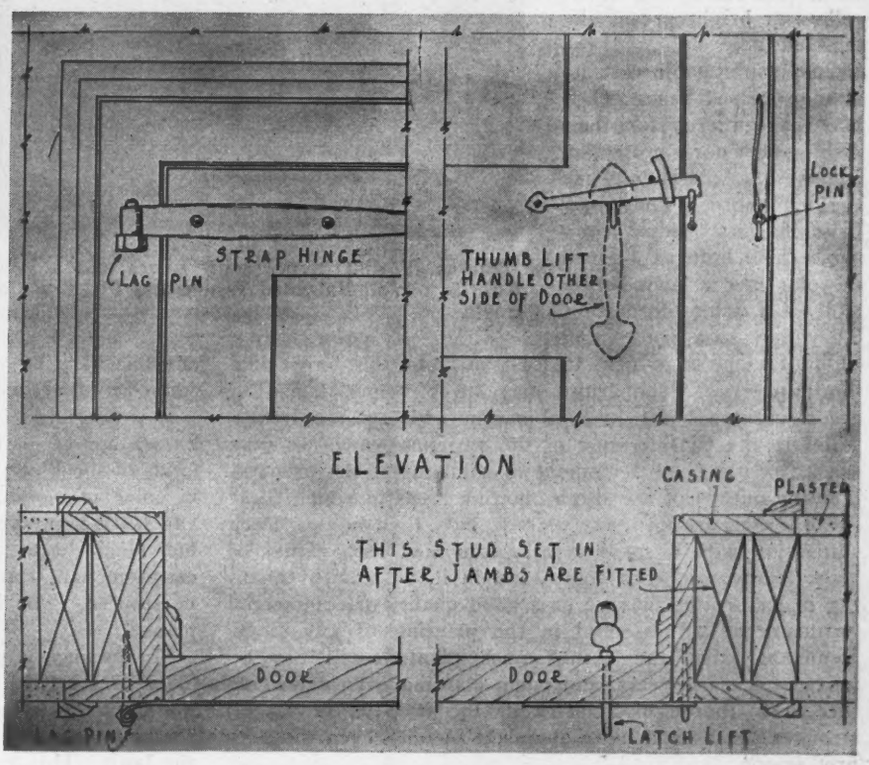


Fig. 15. This Drawing Shows the Details for the Application of Colonial Hardware to Doors and Windows.

LANDSCAPE ARCHITECTURE AND THE HOME

A DEPARTMENT CONDUCTED BY F. A. CUSHING SMITH LANDSCAPE ARCHITECT CHICAGO

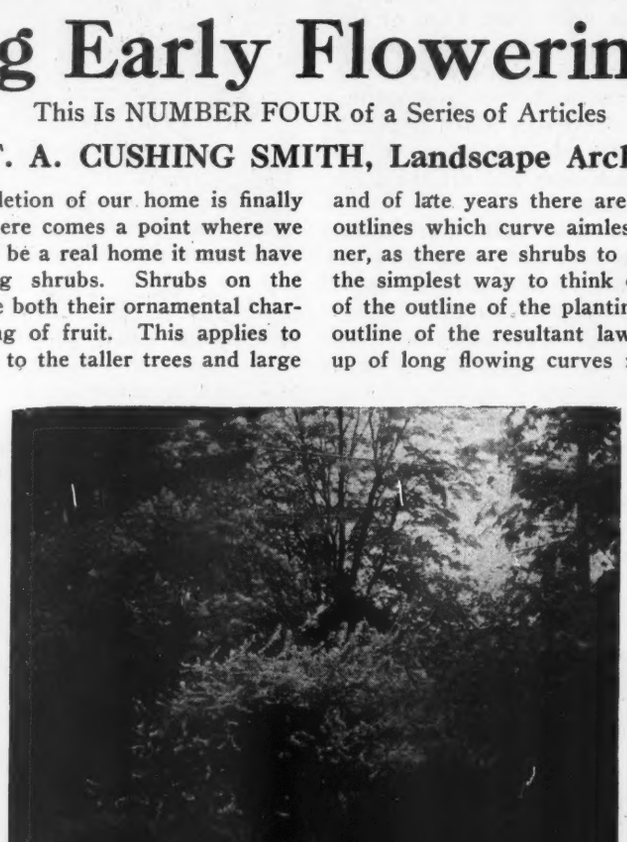
Grouping Early Flowering Shrubs

This Is NUMBER FOUR of a Series of Articles

By F. A. CUSHING SMITH, Landscape Architect

AS the day for the completion of our home is finally seen in the distance, there comes a point where we suddenly realize that to be a real home it must have a proper setting of flowering shrubs. Shrubs on the smaller place may well combine both their ornamental character, and their use for bearing of fruit. This applies to the raspberry, the currant, and to the taller trees and large shrubs of the apple and cherry group.

Shrubs appeal to us in many ways. They may be graceful and arching in habit, like the honeysuckle and the spirea. They may have contrasting textures of leaves which are interesting when planted together, like the feathery tamarix and the weeping willow, which we usually associate with the shores of a lake or stream. They may have twigs which are tinged with red, gray, yellow or bright green, like the red dogwood, and the Pennsylvania maple with its strange striped bark. They may have thorns for their own and our protection against the marauder, like the buckthorn. They may have flowers which commend them both as a touch of color in the lawn border and as a table decoration. They may have fruit either edible for us or which at least attracts the birds, like the mulberry. Such fruits may be of especial use in decorating the house in combination with autumn leaves.



Spirea, Well Grouped with Lilacs and a White Pine, Affords a Well Balanced Whole and Pleasing Color Contrasts.

Before the consideration of the varieties which we may select, let us spend a moment in thinking of the preparation and outline of the shrub planting areas in which these shrub friends are for many years to have their home. Deep cultivation with a spading fork, combined with plenty of black loamy soil, with some sand in it, a sufficient quantity of well-rotted manure or a good quality of commercial fertilizer, are all essential in the planting of any stock. Remember that the shrubs once planted will not be moved for many years, and when planting even a few, do the work thoroughly and well, for it pays in larger, stronger shrubs and more abundant blooms, even the very first season.

There are many methods of outlining the planting areas, and of late years there are as many advocates of curving outlines which curve aimlessly and in a meandering manner, as there are shrubs to go in the areas. To the writer the simplest way to think of the outlines, is to think not of the outline of the planting area itself, but rather of the outline of the resultant lawn area. This should be made up of long flowing curves rather than a quantity of little scallops, with no relation to the lawn outline.

The smaller the lot, the less likely are we to have much room for irregular planting areas, and here the beds might have straight edges. It is somewhat easier to plant the shrubs or flowers in straight rows, than to stagger or alternate them as is found necessary within the curving bed outline.

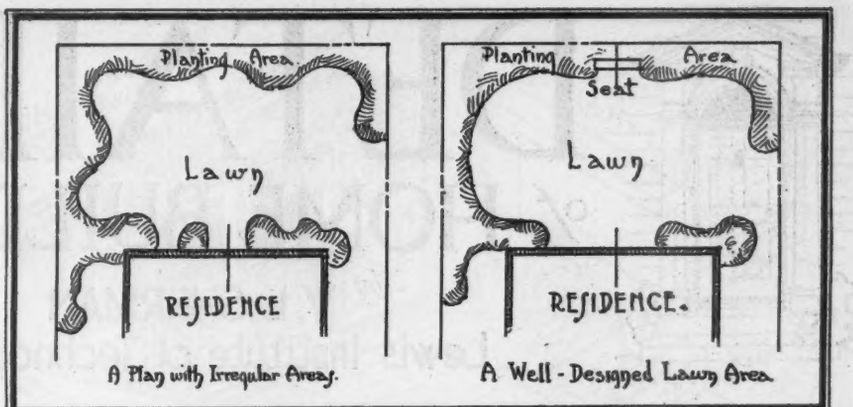
In your zeal for planting something original, and in the frequent anxiety of the nurseryman to sell his surplus stock, do not order one of each of all of the varieties of shrubs in his catalog. The colored plates portray in a very appealing manner the marvels of plants not always hardy in your locality. It is safer and better to select for the average small lot a list of a few shrubs which can be planted in groups of at least five or ten. Thus the mass effect is pleasing when the shrubs are in bloom and they count for something in the border.

It is possible to go to the other extreme, due to lack of knowledge of varieties, and thus have but one or two kinds of shrubs on an entire place. This leads to monotony in color of bloom, height of plant and general landscape effect. Where specimen plants are desired and where the individual shrubs are thus allowed to grow to their greatest perfection, a much larger and more prolific bloomer can be secured. The Rose of Sharon is an excellent specimer plant.

Shrubs may be roughly grouped into three height classes. Those nearest the lawn in a wide border are the low-growing shrubs, like the Thunberg's Barberry, which carry down the height of the middle group of shrubs to the expanse of the lawn. This group is somewhat limited in number, and for convenience we call this group the facing material.

Then there is a very large group of shrubs which form the mainstay of all our varieties, which range in height from 3 to 8 feet when fully grown. To this group belongs the well-known and popular Van Houtte's spirea. Where the planting border is wide, possibly 8 feet, there is a third group of shrubs and small trees which run in height from 8 feet to 12 or 15 feet. The flowering dogwood, sometimes found along our woodland borders, is an example of this last group.

The accompanying plans and photograph outline some interesting and attractive shrub groupings, with the varieties selected from the most part among the types which bloom in April and May in our northern climate. Our aim, however, should be to secure a continuous bloom throughout the season.



A CONTRAST IN PLANTING OUTLINE.
A Restless and A Quiet Lawn.

Among the early flowering shrubs which bloom before the leaves are out in the spring and which thus bring a live color note after the dead drab of winter are the following: the Shad-Bush, or Juneberry, which early in the spring as the shad come up the streams to spawn, sends out an abundance of white flowers like cherry blossoms, which are followed in June by blue-black edible berries.

The Red-Bud, or Cercis Canadensis, is covered with pink and red buds on rather irregular, japanesque branches. The Flowering Dogwood, Cornus Florida, can usually be safely planted, although it, like the Shad-Bush and the Red-Bud is a woodland edge plant, with a coarse texture and the leaves and branches carried high. The Forsythia or Golden-Bell, is a large family, all members of which have arching branches covered with golden yellow, bell-shaped blossoms before the leaves arrive. This latter family is especially effective if planted with the red-twigged dogwood.

The Spirea family, among the many varieties of which is the bridal-wreath, forms a large and useful group of early flowering shrubs, in great demand on Decoration Day. The Japanese Flowering Cherry, with its white and pinkish blooms, the flowering plum, the pink buds of which are always a happy surprise in the early spring, and the early Fragrant Honeysuckle are also favorites in the early flowering groups.

Taller Group
(8 feet to 25 feet)

Thorn Apples (Crataegus in variety).

Without the cheerful blooms of this tree, with its horizontal stratified branches, the woodland would indeed be bare.

Crab-Apples (Pyrus in variety).

From the early spring blooms through the puckery taste of the fall fruits, the crab-apple, famous for its jellies, will ever be sought by the home owner.

Lilac (Syringa vulgaris).

One of the earliest of the old-fashioned shrubs which framed the entrances of our old New England homes and gardens was the purple and white lilac, with its quantities of spikes of bloom.

Middle Group
(4 feet to 8 feet)

Red Osier Dogwood (Cornus alba Siberica).

This shrub with its red branches is especially fine when grouped with Golden-Bell.

Morrow's Honeysuckle (Lonicera Morrowi).

This excellent screen shrub has fine whitish blooms and red berries in the early fall.

Tartarian Honeysuckle (Lonicera tatarica).

The fruit of this variety is yellow with the bloom much like the former variety.

Van Houtte's Spirea (Spirea Van Houttei).

The spirea is an old standby used for generations in the borders, and with its arching white branches resembles nothing so much as snow-drifts in winter.

Low Shrubs
(2 feet to 3 feet)

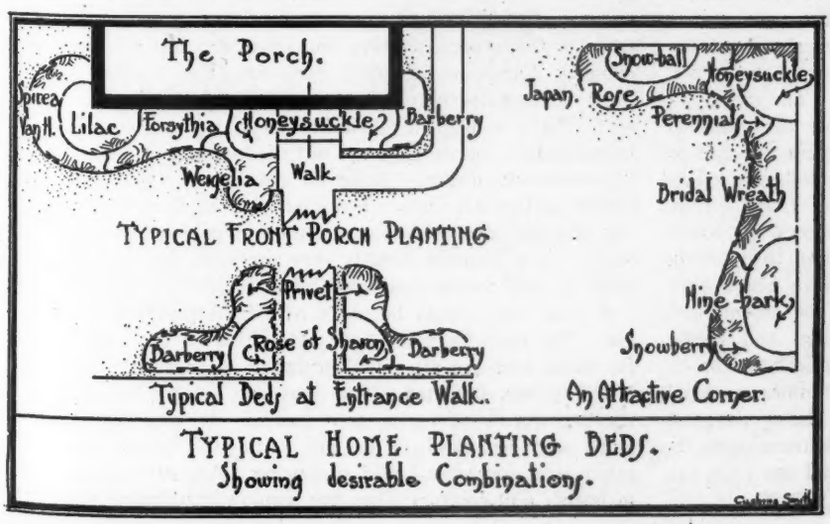
White Kerria (Rhodotypos kerriodes).

The slender branches of this hardy shrub are well covered with bunches of white flowers much like our syringa. Later in the fall are little clusters of brown and shiny fruits borne at the ends of the branches.

Cinnamon Rose (Rosa cinnamomea).

One of the best of the early blooming roses is the old-fashioned cinnamon rose which is hardy and a splendid bloomer.

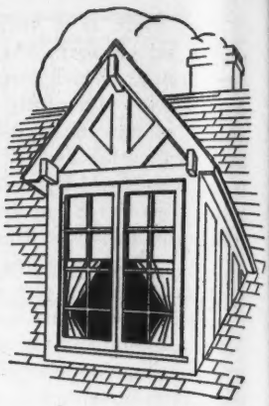
In the grouping of shrubs remember that the coarser textures and the larger leaved varieties look best in the background, for like individuals with heavy features they seem a little out of place in the average setting. The finer or smaller leaved shrubs will usually appear at their best at the front of the border or about the entrance to the house. Plants native to the woodland would seem quite out of place if used in such a situation or even about the perennials of the flower garden. They can well be employed for mass effects in the rear of the lot, where they will serve as a screen or protection from unsightly objects.



TYPICAL HOME PLANTING BEDS.
Showing desirable Combinations.

DETAILS of HOME BUILDING

by V. L. SHERMAN
Lewis Institute of Technology



Detail 3—Window Treatment

THIS is June. Out of doors is best of course, but if not that, we can at least keep open house. There is but one thing better than an open window and that is an open door. So French doors are here taboo, but may their numbers increase. Except for the hearth no part of the house is more celebrated than the window, and on the other hand only a smoky fireplace can cause more cussing than a balky window. Balky windows, faulty in outlook, appearance, or openness should be a thing of the past, and fit to be taxed, as they once were. Now we have every advantage, lot restriction, lighter structure, and a fad for ventilation. Nothing to want but taste. Those responsible for the noticeable advance in house design in the last twenty years have spent much of their time on windows. Garish wall papers, lit with chromos, are replaced with cool walls decorated from within and without with windows. The musty company parlor with the blinds never opened, and with wax flowers under the glass bell, gives way to an airy living room, real flowers within smelling range, and blinds, if any, which probably couldn't be closed at all, thank heaven. Sound advice, if you must have workable blinds, get awnings. The only place for a louvre is in an attic or a bedroom door. All of us in city, town, or country are blessed with open windows.

It is difficult at times to decide between the two types of window, double-hung (guillotine), or the casement window. Each has its advantages. And the casement in its swinging out or swinging in has its advocates in both directions. On speculation the double hung window is by far the safer, and it can be made fully as attractive as any casement window. But it cannot be used with as much freedom or with as much small effect. The larger and high double hung window is now replaced by the French door.

The double hung window becomes a unit of wall design. It can be placed to emphasize a plain wall or to collect the lines about it. This is shown in the upper sketch of the windows over a porch roof. They are close to the eaves, mullioned, and silled near the porch roof. The windows point to both in a polite way. The sketch of the railed-in windows below shows the possibility of bringing the eye to one point, or to a group of points. Such methods are effective from the outside and are very attractive from within. They claim appreciation. Double hung windows of today are just as good as they ever were except when the parting strips and stiles are painted soft wood. I have heard they should be hard wood, oiled. Headers should be strong and sills permanent. Here shrinkage, poor flashing, and fitting take toll. No double hung window should ever leak a drop or wobble, or stick. Metal weather stripping overcomes many of these difficulties. A room I use was cold in the winter, the sash rattled, and sung like rigging. Now the room with its twelve big windows is warm even in a gale and I can raise the windows as easily as I used to raise the roof.

The figures 1 to 4 show details of double hung windows in isometric, with a scale for measurement of 1½ in. equal 12 in. if desired. Notice the difference between Figs. 1 and 4. They show the contrast of design in structure. Fig. 2 shows a deeper section as built with 2 by 4 studs, a section allowing ample room for closing and locking blinds when screens are used. Fig. 3 shows a sill used with stone or brick walls. The lintel with this type is hidden. The window is really colonial and lends a dignified air to the wall.

The variety in design using casements is apparently without limit. Loss of wall space is less regretted when lost to these delightful windows. Refusal to argue the advantages of swinging them out or in probably identifies my own preference, but both are good. Fig. 5 shows an in-swinging casement window with a two-piece sill. Drip mouldings should never be omitted and they should be let into the jambs to a good fit. Metal drip mouldings and sill joints are an advantage, and some claim that weep holes below are too. But a weather tight casement window depends more than ever on the stability of the frame and even the house frame. A priming coat of paint left long enough to discover the leaks, which can be recalked, helps, but a poorly built frame, case and sash which shrink and warp will make of it a stationary affair that keeps nothing out. This croaking should not be taken too seriously, however, for no builder will pass the buck to a window. The sash of the casement which swings in is of course better protected. If not too large it is not in the way and can be used to direct air currents. Curtains and shades fastened to the sash are out of the way when the window is open.

Now the use of casements which swing out is in keeping with house design across the Atlantic. The English are not bothered with flies as we are. Screens, avoided there, are unavoidable here. But this need not detract from appearance or operation. A group of casements swinging out is an inviting sight. Almost like an open door. They proclaim a ready entry to the house whenever you have been out of doors long enough. Casements naturally open out. Fig. 6 shows a casement window section in stone or brick fitted for a window seat. Such a plan is desirable when it can be used. As hinted before the sight of the out of doors has taken its place in interior decoration. Make all the use of it possible. The sketch to the left shows a similar plan in a frame wall. In this instance the casings are plain except for the projection above. The transom idea is very practical, and in passing it might be said that a transomed kitchen window is the thing.

A long story could be made of the hardware for window use. The manufacturers have everything on the counter, and for those who are ultra the hardware shops supply the trade. Not long ago I visited a firm that was turning out door and window hardware for a new theatre. It was largely hand work and beautiful in design. And the pains taken for mechanical correctness was surprising. A great deal is added in beauty and comfort when the window hardware is first class.

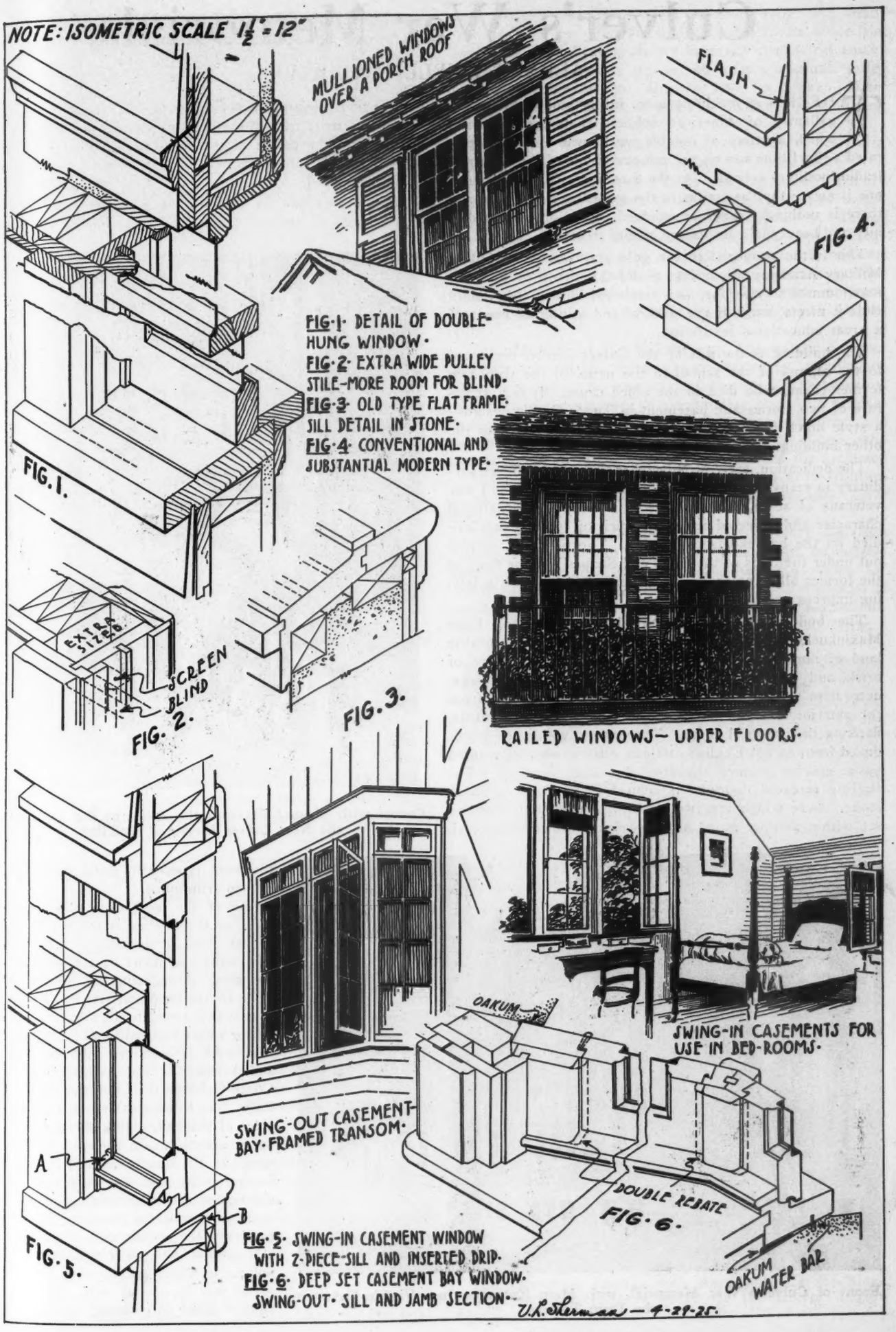


FIG. 1. DETAIL OF DOUBLE-HUNG WINDOW.
FIG. 2. EXTRA WIDE PULLEY STILE—MORE ROOM FOR BLIND.
FIG. 3. OLD TYPE FLAT FRAME SILL DETAIL IN STONE.
FIG. 4. CONVENTIONAL AND SUBSTANTIAL MODERN TYPE.

FIG. 5. SWING-IN CASEMENT WINDOW WITH 2-PIECE SILL AND INSERTED DRIP.
FIG. 6. DEEP SET CASEMENT BAY WINDOW. SWING-OUT SILL AND JAMB SECTION.

V. L. Sherman — 4-29-25.

Culver's War Memorial

ALBERT KNELL, Architect

THERE is probably no more fitting monument to the gallantry of American soldiers than the memorial which a group of notable world war veterans dedicated a short time ago on the campus of one of the country's leading military schools. At the threshold of that memorial one is aware that he stands in the presence of a shrine, yet there is nothing somber or subdued there—only quiet dignity and beauty in a handsome, useful structure.

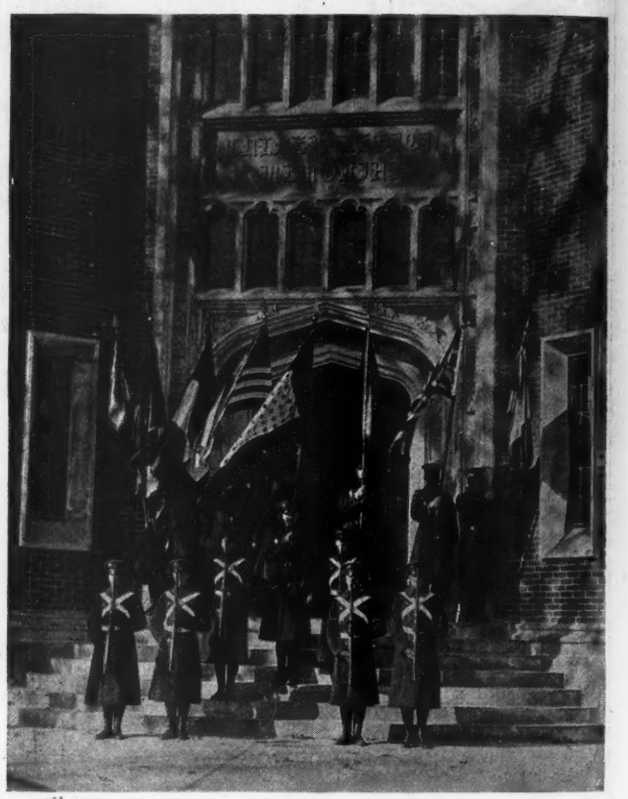
This is the memorial to the gold star alumni of Culver Military Academy, rendering, as did the men it honors, the maximum of service, for, as a combined library and alumni club, it meets many of the cultural and utilitarian needs of a great educational institution.

The building is the gift of the Culver family, presented to the alumni of the school in the name of the sixty-two former cadets who died in the allied cause. It is a structure of two stories and basement in Tudor-Gothic design—a style much favored for schools and in keeping with the other buildings on the Culver campus.

The dedication, early in November, was an event extraordinary in many respects. The presence of soldiers and war veterans of seven nations gave it a distinct international character and reflected again the spirit of comradeship kindled on the battlefields of Europe. The program, carried out under the folds of the Stars and Stripes and the flags of the former allied powers, was a spectacle which left a lasting impress upon those present.

The building stands on the sloping shore of Lake Maxinkuckee, a beautiful little freshwater tract in the prairie land of northern Indiana. It is a T-shaped structure of brick and stone, with battlemented parapets and large, decorative windows. The most commanding feature from the exterior is a pair of Gothic towers, round and sturdy, flanking the beautiful portal. The towers, which are reproduced from an old English castle in Sussex, are surmounted by a massive cornice supported by stone brackets. The slightly recessed doorway is topped by a Tudor arch in stone, above which are two six-light ornamental windows set within another stone arch crowning the whole portal. In the panel above the arch are five tablets bearing the coats of arms of the Army, Navy, Marine Corps, and Army Air Service, and the device of the Associated Veterans of the Allied Countries, the arms of service in which the sixty-two Culver men died.

All windows are in delicate stone tracery, leaded in square panes of antique cathedral glass. The sash are of casement type, with metal frames and bronze trimmings.



Cadets with Massed Flags of the Allies at the Portals to the New Culver Memorial Building.

Front of Culver's War Memorial, with Main Entrance Just Visible Between the Twin Towers.

One of the most distinguishing features of the interior is the employment of cut stone in decorations and finish. The walls and floors of the main floor are stone throughout, and likewise of stone are the handsome stairway and balcony which dominate the attention as the visitor enters the main hall. This beautiful work is patterned after the stairs and balcony in the ancient castle of Conte Guidi, in the Casentino Valley of Italy. The balcony extends around three sides of the hall, giving passage to the upper apartments in each of the three wings of the building. At the balcony landing is the gold star room, a domed, sky-lighted shrine wherein are venerated those who made the sacrifice. Here are preserved the photographs of each gold star soldier and an elaborate vellum volume in which are inscribed the individual war records of each. On an expansive tablet of gleaming white marble

Looking Across the Main Hall into the Library Reading Room Through Three Tudor Arches.

are chiseled the names of the noble sixty-two. This room is windowless and its walls are paneled in Flemish gray.

On the wall at the head of the stairs is fixed the bronze tablet in "memoire des cadets morts glorieusement pour le droit et la civilisation" presented by a delegation of foreign veterans on a visit to Culver in 1922. At the right of the door to the gold star shrine is the cluster of allied flags, each flag officially presented for permanent keeping in this memorial hall.

One of the most exquisitely furnished chambers in the building is the lounge, which is part of the club quarters and occupies the east wing of the main floor. This room has stone walls and floor and a magnificent cut stone mantel richly moulded and carved. Embossed in natural stone on the wall above the mantel is the coat of arms of the Culver Legion. Furniture, draperies, rugs and chandeliers of rare beauty and distinction give this room the magnificence of a princely setting.

The Tudor-Gothic influence is emphasized by the several Tudor arches employed for the doorways on the main floor. All openings from the hall are through cut stone arches of this pattern, but a pleasing variety is introduced by the ornamental iron gates at the doorways to the library reading room and the lounge.

On the second floor is a special suite for the board of trustees, the club dormitory, and several conference rooms. The trustees' room is furnished as an old English library, with panel walls and a huge fireplace, and furnishings to correspond to the period. In the dormitory are baths and lavatories, and bunks for seventy-five "old grads" to fill at home-comings and commencements.

An alumni chapter room is in the basement. Its romantic old fireplace, plastered ceiling, half-timbered walls, and comfortable chairs make it an inviting place for the talkfests of old schoolmates. An assembly room and headquarters for the school's student publications share the basement, as well as space for essential mechanical equipment. All these rooms are entered from a spacious, softly lighted corridor, which, with its floor of broken stone, resembles an underground chamber in some old building of the middle ages.

Throughout the building there are evidences of old world influences in art and architecture. The hardware is a reminder of old hand forged locks and hinges and there are window panes which seem to have been mended as in the days when glass was a rare and costly commodity. Tapestries, war relics and similar embellishments strongly suggest the ornamentation of a knightly manor of medieval time. In a niche in the rock wall of the basement corridor is a drinking fountain with a basin and mug of hand wrought copper which formerly did duty in an old Spanish villa.

The planning of the building and the unique features incorporated in its design represent many months of thought and study by the board of trustees of the academy. Not only to the planning of the building but to its furnishings as well, they gave their whole-hearted attention and painstaking devotion. Mr. Albert Knell, of St. Louis, who has designed all of the Culver buildings, was the architect.

The memorial seems singularly suited to an institution of such a proud war record, numbering almost 1,400 Culver men.

The academy was founded in 1894 by Henry Harrison Culver, a generous and philanthropic citizen with an inspiration to build a great school to train American youths for the duties of citizenship and life's work. The memorial is ample testimony of the fruition of his highest aspirations.

EARLE V. HITCH.

The Luxurious Lounge with Beautifully Carved Stone Mantel and the Coat of Arms of the Culver Legion Above.

Sheet Metal Details

Sheet 8—Flashings Around Drains and at Concrete Roof Joints

EDITOR'S NOTE: *This is the eighth of a series of articles, presenting authentic details for flashing and metal work problems in building. The drawings, presented on the opposite page, were prepared by the Copper and Brass Research Association, and may be applied in the use of all roofing metals.*

The first of this series was published in the November issue of the AMERICAN BUILDER. *Readers will remember that the drawings are intended to show the details of construction for every trade involved and are suitable for use by the drafting room in designing details. The distortion of the drawings will be apparent at a glance, but this purposely has been done that the methods may be made more clear.*

NOTES FOR DRAWINGS ON OPPOSITE PAGE

FIG. 43. Two ways of making a water-tight connection between the roofing and an inside iron drain or leader are shown in Fig. 43. The one on the right shows a method of connecting to a felt-and-gravel or other composition roof, while the one on the left shows the method of connecting to a sheet metal roof. In both instances the copper tube should extend into the iron drain at least 6 inches, but before being set in place the outside of the copper tube toward the iron pipe should receive a heavy coat of asphaltum.

In cases where the outlet does not drop directly into the leader, a lead gooseneck is used. This is made with a flange on the upper end and is inserted through the hole in the copper and soldered to it. The lower end is made with a brass ferrule or caulking ring for making a tight connection to the pipe. For the composition roof the copper should extend out on the roof 4 inches beyond the gravel-stop and be incorporated in the layers of roofing in the usual manner.

For sheet metal roofing the connection between the roofing and flashing is made by a lock seam secured to the roof by cleats. This seam is to be turned in the direction of the flow and soldered. Although the drawing shows one sheet of copper from the gravel-stop and seam to the bottom of the tube, the pan is built up of several pieces. The number and arrangement will vary with each design. To avoid confusion no attempt has been made in the drawing to show the necessary seams.

Fig. 44. For large roof areas on concrete buildings provision must be made for the expansion and contraction of the reinforced-concrete roof slab. This is done by allowing open joints through the concrete roof slab at certain places. These joints must, of course, be recognized in the roofing and an arrangement made so that the roofing will ride with the concrete roof slab and not be broken by the action caused by temperature changes.

The conditions presented in Fig. 44 shows a tile roof laid on a cement mortar bed over a concrete roof slab with fabric waterproofing between the mortar bed and the concrete slab. The expansion provision for the roofing is made by a band of No. 14 iron painted on both sides with asphaltum and encased in 16-ounce copper. This band is made in lengths convenient for handling; the width should be at least 5½ inches more than the width of the expansion joint in the concrete at the lowest temperature.

At each end of the iron band and between the end of the band and the copper a space "B" must be left for expansion. This space should be equal to one-half the width of the expansion joint in the concrete at the lowest temperature plus ¼ inch. The width of the copper, therefore, both on the tile and on the waterproofing fabric will be equal to twice the distance "B" plus 5½ inches. The height is determined by the space required by the mortar bed plus the thickness of the tile.

The entire flashing is laid while the fabric waterproofing is being placed or directly afterward, depending on whether it is desired to incorporate the lower flanges of the flashing in the layers of the fabric or place the flashing afterward and cover the flanges with two additional layers of fabric extending out 6 inches on the roof. After the fabric is laid, the mortar bed and the tile are laid. Just before the tile is laid the space between the copper and the cement is filled with mastic-compound and the tile squeezed under the copper and into this compound.

This expansion joint is often made without the iron strip. A copper sheet is shaped roughly as shown in the drawing and is filled with a high-melting-point asphalt. The tile is then set in place. The movement due to temperature changes causes distortion in the flashing strip. The asphalt adjusts itself to take care of this distortion. This method is somewhat cheaper than the one shown but has not the rigidity necessary to resist external wear.

Fig. 45. Another method of connecting a roof surface to an inside drainpipe is shown in Fig. 45. In this drawing the right-hand side shows a composition roof on a wood base and the left-hand side shows a tile roof on a concrete base. The copper tube before being placed in the cast-iron drain-pipe is soldered to a brass ferrule made long enough so that the copper will lap the ferrule 3 inches. The copper sleeves should be secured to the flashing flange on the roof by a soldered lap seam.

The lead gooseneck, described in Fig. 43, is also successful with this type of outlet. The flashing flange should extend out on the roof a distance equal to the diameter of the tube and be incorporated in the layers of the roofing material. Near the outside edge of the flashing flange a crimp is soldered. In the right-hand example it should be high enough to prevent the washing off of the gravel or slag and on the left-hand side it should be high enough to finish flush with the top of the tile.

The junction of the brass ferrule and the iron drain-pipe must be carefully caulked with lead, and the opening at the top of the copper tube at the roof provided with a strainer of basket or other design. The strainer has been omitted in the drawing to avoid confusion.

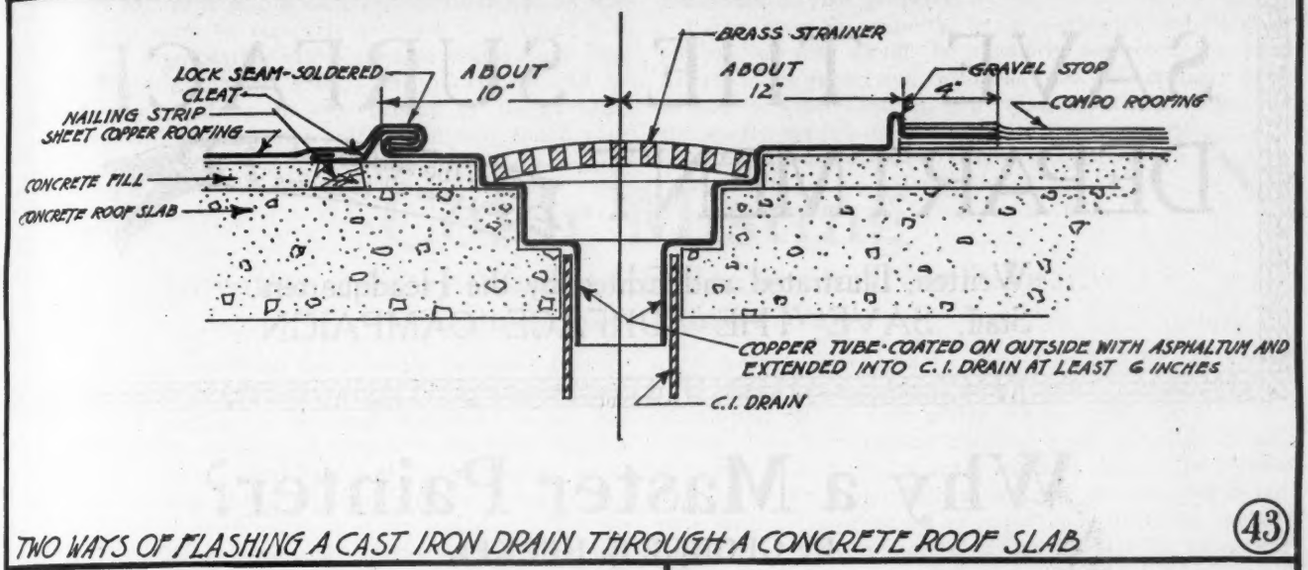
Fig. 46. This drawing is shown primarily to indicate the general type of copper flashing used in this sort of drain connection. The details vary with the design of the connection and the conditions under which it is used. This connection is a patented article and the manufacturers should be consulted for details and the best type to use under a given condition.

✣

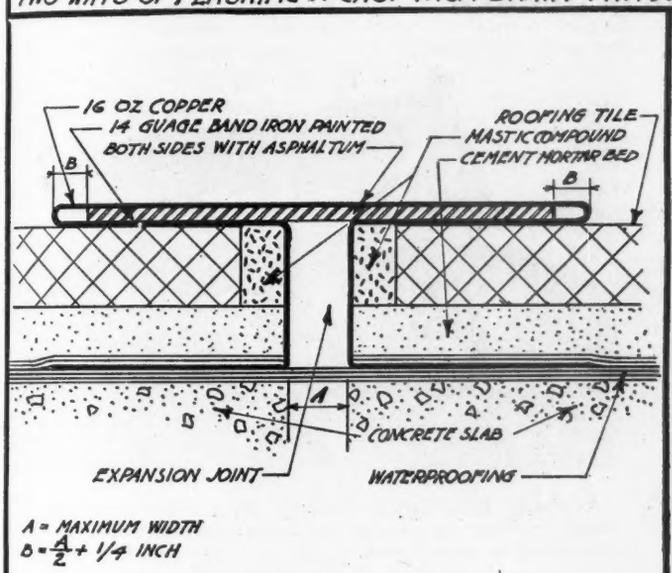
Training of Bricklayers

THE Federal Board of Vocational Education has published Bulletin No. 95 of the Trade and Industrial Series No. 27. The title of the bulletin is "Bricklaying" and it contains an analysis of the trade together with suggestive courses of training for apprentices.

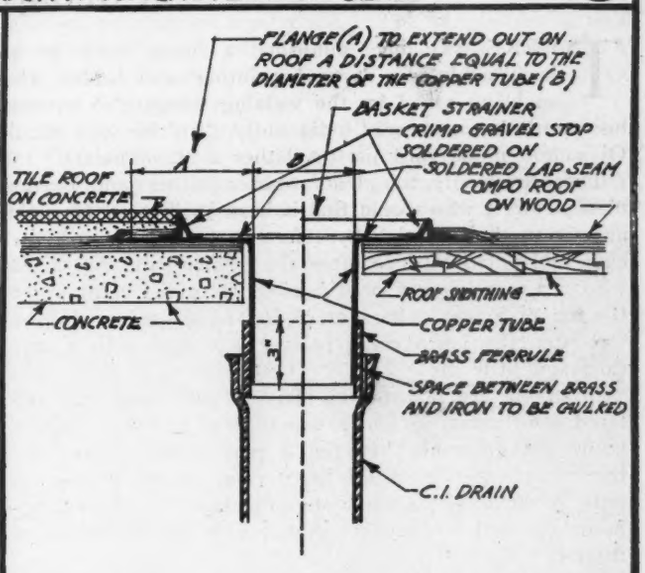
The bulletin was written primarily with the thought of meeting the needs of training courses organized for employed apprentices. It contains much of interest to employers and employes, as well as to those directly concerned with the supervision and instruction of trade classes in vocational schools.



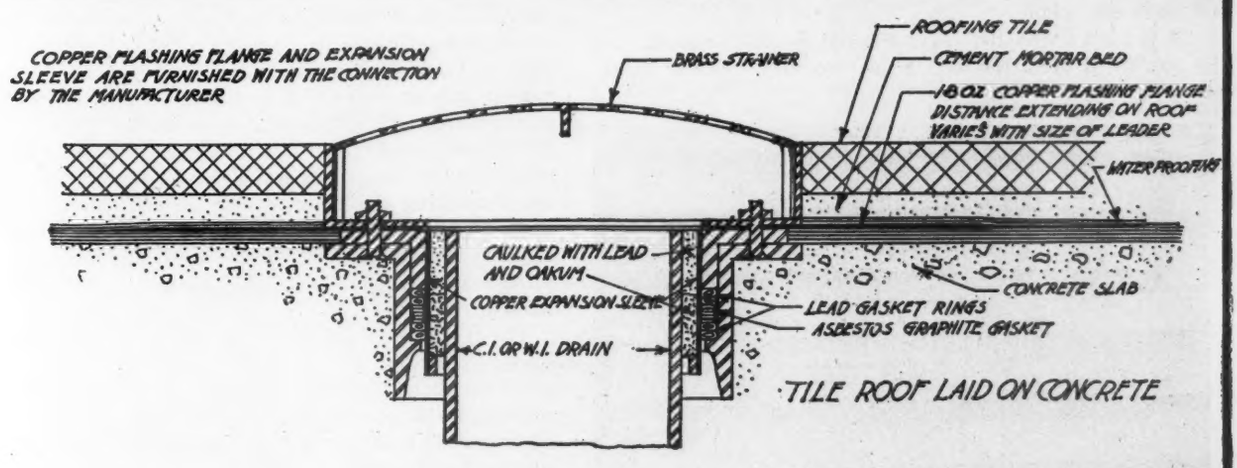
TWO WAYS OF FLASHING A CAST IRON DRAIN THROUGH A CONCRETE ROOF SLAB (43)



FLASHING FOR EXPANSION JOINT OF FLAT TILE ROOF ON CONCRETE (44)


FLANGE (A) TO EXTEND OUT ON ROOF A DISTANCE EQUAL TO THE DIAMETER OF THE COPPER TUBE (B)
BASKET STRAINER
CRIMP GRAVEL STOP SOLDERED ON
SOLDERED LAP SEAM COMPO ROOF ON WOOD
TILE ROOF ON CONCRETE
A
B
ROOF SHEATHING
CONCRETE
COPPER TUBE
BRASS FERRULE
SPACE BETWEEN BRASS AND IRON TO BE CAULKED
3"
C.I. DRAIN

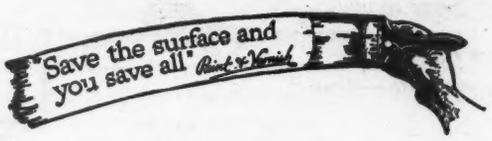
FLASHING FOR A ROOF DRAIN FROM FLAT ROOF COVERED WITH TILE OR COMPO (45)


COPPER FLASHING FLANGE AND EXPANSION SLEEVE ARE FURNISHED WITH THE CONNECTION BY THE MANUFACTURER
BRASS STRAINER
ROOFING TILE
CEMENT MORTAR BED
16 OZ COPPER FLASHING FLANGE DISTANCE EXTENDING ON ROOF VARIES WITH SIZE OF LEADER
WATER PROOFING
CAULKED WITH LEAD AND OAKUM
COPPER EXPANSION SLEEVE
C.I. OR W.I. DRAIN
CONCRETE SLAB
LEAD GASKET RINGS
ASBESTOS GRAPHITE GASKET
TILE ROOF LAID ON CONCRETE

FLASHING FOR A "HOLT" LEADER CONNECTION (46)

Sketches for Sheet Metal Working Methods, Explained on Opposite Page.

SAVE THE SURFACE DEPARTMENT



Written, Illustrated and Edited by the Headquarters Staff, SAVE THE SURFACE CAMPAIGN

Why a Master Painter?

By GEORGE B. HECKEL

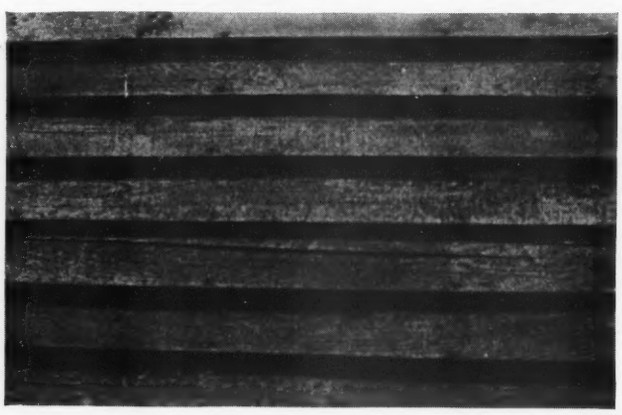
THERE was once published a funny story of an Irish handy-man at work painting on a ladder, who, on being asked by the walking delegate to produce his union card, answered indignantly, "An' for why should Oi nade a union card jist to slather a bit of paint?"

There are plenty, too plenty, master painters and journeymen painters, who would find it hard to give a convincing answer to this question by reference to their own knowledge and practice. Too often the master painter is a man who has merely graduated himself from the paint pot by the aid of a few dollars of capital and nothing else, and too often the journeyman painter is a man with a union card and little more.

But there are real master painters, men who have mastered their craft, in every community, and such masters know the difference between a journeyman painter who understands painting and a journeyman painter who is such only by virtue of his union standing and it is interesting to note how real journeymen gravitate to the service of real masters.

The real master painter is never the one who submits the lowest bid but he is always the one who submits the most intelligent bid, and is, in consequence, the one who will not have to "skin" the job and the customer in order to come out whole.

"A pig may whustle," says the old Scotch proverb, "but he has an ill mou' for it." So a tyro may "slather paint,"



Weathering and Decay Have Begun Their Work Upon the Weatherboards of This House. An expert painter can prescribe and possibly save them. A quack painter, like a quack doctor, can do no good.

Anybody Can Splash Paint. It takes an experienced master painter to handle the important work of properly decorating a new house.

but he is ill-equipped for it. For economic reasons, surfaces must be saved with paint and varnish and on economic grounds also they had better be saved by a novice than not at all; but for any important work the master painter repays far more than the cost of his services; just as for trivial indispositions the family medicine closet serves; but, when anything real is the matter, we want the doctor. The master painter first of all has obtained his master's degree in the university of practical experience. Like the experienced old family doctor, he knows the symptoms at a glance and in nine cases out of ten knows the remedy without consulting the books. For surfaces have their symptoms and their idiosyncrasies, and their proper treatment requires specialized knowledge, without which the treatment may introduce complications worse than the original disease.

The real master painter is not only a graduate artisan but also a decorative artist. He understands the laws of color harmony, color balance, and color contrast; the values of light and shade; the laws of form and symmetry; and, in addition, the fitnesses and unfitnesses of the many materials utilized by his craft.

He is not much of a self-advertiser, but he is worth hunting and finding; and when found he should be consulted, retained and trusted like another family physician. Such is the master painter of today, an artist, a technologist, a consultant. The master painter of tomorrow will be all these and something more. He has been compared with

the family physician. More and more the tendency of the master painter is in the same general direction; so that eventually he may be regularly retained to forestall rust and rot and deterioration rather than to check them after they have got a running start. This movement can be effectively promoted, to his own benefit, by the property owner who will take the hint. After you have found your family painter, put it "up to him" to watch and safeguard the health of your property.

Every piece of property, be it residential, industrial or publicly owned, should be regularly inspected for paint defects in the spring and fall of the year. If necessary work is done promptly, upkeep and repair costs will be kept to the lowest possible minimum.

Color Misting

Invention of Spray-Painting Machine Inspires New Decorative Technique for Painted Walls

OUT of the utilitarian has come the beautiful, a really new idea in wall decoration. Humble but efficient is the mechanical painting equipment which has been developed to do yeoman service in the field of paint application. A new technique for the producing of strikingly beautiful wall effects was far from the minds of the inventors as they perfected paint spray machines. Yet we have found, in these novel and interesting machines, not only great economies in time and labor, but also a vista of unique and handsome interiors, the possibilities of which are bounded only by the limits of imagination.

Distinctive decorative treatments for the walls of homes, as well as of hotels and office buildings, are easily obtained with the small interior decorating, spray-painting outfit. No great amount of time, labor or material, and no great expenditure for equipment or work is required. The labor of decorating is reduced by more than half by the use of this up-to-date equipment, which brings stippled effects, blends and spatter work within the reach of all.

The "baby" mechanical painting outfit includes an air-compressing unit and a spray-painting unit. The former includes an air compressor, a motor to drive it and an air tank with accessories; all mounted on a portable, rubber-tired frame. The motor is of such a size as to permit ordinary lamp socket connections. The spray-painting unit is made up of a paint container of sufficient size for ground-coat work, a smaller one for spray-spatter colors, a spray gun and the necessary hose.

This decorative work is accomplished by coating the surface to be decorated with the desired ground color. The consistency of the paint is such as to produce a good hiding coat. After application, this coat is allowed to dry. Then

Color Misting, Done with Mechanical Painting Equipment Operated at Low Pressure, Is a New Method of Interior Decoration for Walls. Note solid color of first coated portions of walls. Because of the wide variety of available colors this system of decoration possesses many interesting possibilities.

the harmonizing spatter colors are applied in the order desired. These may be put on one immediately after another, as it is not necessary to allow drying time between applications.

Since one does not have to wait until the first spatter coat dries before applying the next, there is opportunity to obtain different effects by using flat, semi-gloss, and gloss paints. By the use of gloss paints a blending effect is possible; while in the use of flat paints the individual colors take on a decided form and the effect may be likened to oatmeal paper.

At a saving of both time and material, very charming stippled finishes may be had by this newest of methods. By no other method is it possible to obtain the perfect blending which the spray equipment produces.

While many are familiar with stippling and blending, few, indeed, are acquainted with the harmonious and attractive finishes known as "spray spatter work." This work is a combination of two, three or more colors misted or spattered consecutively on a solid background. These treatments, like the others, are attained by the use of an exceedingly low air pressure. Spray spatter combinations are limited only by the knowledge of color harmony, the decorative "sense" and the number of walls to be finished.

The small paint consumption, the speed with which decoration is applied, the wide number of colors that may be used and the fact that full advantage may be taken of gloss, semi-gloss and dull finish paints in producing a delicacy of finish, together with the coarseness or fineness with which the misting can be done, are points that specially recommend this treatment to both owners and decorators. A sprayed finish appropriate for any room can be selected and all such finishes possess the sanitary and washable characteristics common to painted walls.

Conservation and Construction

Our Natural Resources Are So Depleted That Unless Rigid Conservation Is Practiced Construction Will Suffer

"CONSTRUCTION is the balance wheel of American industry," Herbert Hoover, Secretary of Commerce, said recently.

Everyone connected with the building trade realizes the truth of this statement as well as the fidelity of another of Secretary Hoover's precepts — the interdependence of the various industries.

The Quality of a New House, Its Chances of Surviving the Fight Against the Elements, in Fact the Very Buildnig of the House Itself, Depends Largely Upon the Conservation Practices of the Country.

When someone asks, more or less facetiously, "Will it become necessary to raise potatoes and pigs on the land now occupied by Chicago, Philadelphia and our other great cities?" or "Have we reached our industrial zenith?" or "Is the day coming when our manufacturing plants will all be idle and deserted?" the builder realizes that these questions are not nearly so idle as they may appear.

It is not predicting another war, industrial revolution nor bolshevism to lend a serious ear to the queries or to give them sober consideration. It is an obvious fact apparent to everyone who keeps a weather eye upon industrial conditions that if raw materials are lacking, if profits cannot be made, industrial plants will cease to function. And if we continue our present rate and method of development we shall eventually be face to face with that situation, and with the fact that if the profits or raw materials of one industry are jeopardized, all other industries even remotely connected with it suffer.

The wealth of our nation arises from two sources: the natural wealth in our mines, fields and forests, and our industrial wealth, the creation of our thousands of manufacturing plants.

The wealth of our industrials, however, can be perpetuated and increased only by proper conservation of industrial property from year to year. Mineral resources, exhausted in the production of metal products, cannot be replaced. Good authority states that the end of our iron ore is in sight. It may be years before all known sources of supply of this valuable mineral are depleted but the fact remains that more ore has been taken from the earth during the past twenty years than was removed for more than 100 years prior to that time.

Much closer to the interests of the builder, architect, or dealer, however, is the fact that our timber resources are about to disappear. The astonishingly rapid depletion of these stores calls not only for reforestation but also for proper conservation and preservation of the thousands of wood and metal structures now in daily use. In this conservation is where the most important function of paint for industrial plants, and, in truth, for any construction, asserts itself.

Manufacturers are constantly undergoing the experience of enormous production with relatively small profits. The margin of profit in most industries is very small as compared with the money turnover. Out of each dollar received for finished products a mighty small proportion goes into "net profits."

In factory after factory that margin is becoming narrower every year. Of course, there are exceptions, but many a plant manager is confronted with the necessity of showing a better margin of net profit and apparently finding but little chance of doing so. Industrial profits in the future must come not only from increased production, which brings with it a relatively lower unit cost of production, but also from a lowering of overhead charges.

Many factors enter into the overhead of the modern industrial plant. Chief among these is the most of maintenance of plant and equipment. The wear and tear of manufacturing, the action of gases, acid fumes and weather conditions all have ruinous effect. The extent of this damage is beyond computation—it runs into millions. The only hope of successful combat with these forces lies in the adequate use of the particular type of paint or varnish that will resist them for a maximum period.

By conserving the iron, steel, wood and other materials

Because a House Is Ten or Fifteen Years Old It Need Not Be Neglected. Upon conservation of individual property depends much of the prosperity of industries and trades.

of which our plants and their equipments are made, paint products held to conserve our remaining supply of raw materials. Without these raw materials factories cannot operate. By preventing rapid depreciation of standing property, paint products lower overhead, decrease repairs and replacements and so make more of gross earnings available for wages and dividends.

Great progress has been made during the last fifteen years in the science of paint and varnish making. Today, the paint or varnish manufacturer can supply a product that will do the work expected of it, within reasonable bounds, for a maximum period.

A vast number of special paint and varnish products are made to meet and combat specific conditions. Studies have been made in many industries to determine causes for deterioration of buildings and machines and to devise surface coatings to prevent the loss. Among the specialized paints are anti-corrosive paints, acid resistant paints, fire retardant paints, and a number of others which prove valuable to certain industries.

Prominent in this research work, an activity entered into collectively and individually by nearly all paint producers is that of the Institute of Paint and Varnish Research, of the Educational Bureau, at Washington, of which Henry A. Gardner is director. The work of this bureau, conducted jointly by the Paint Manufacturers' Association of the United States and the National Varnish Manufacturers' Association, has been of immeasurable benefit to the entire country in its combat with all types of destructive forces. Many of the individual developments of the paint and varnish manufacturer are the result of months of scientific investigation conducted by the experts in institute laboratories. As a result, there are very few problems of industrial upkeep work that cannot be adequately met through the proper use of some paint or varnish product.

Conservation is the keynote of the present age. We are suffering from the over confidence and carelessness of our ancestors. To preserve the structural material on hand is a vital necessity to which people are gradually awakening, for our forest resources must be used for new constructions, not for replacing parts deteriorated through neglect. We must, too, give our timber a chance to rehabilitate itself by planting and caring for new growths, and preventing useless losses through insects, fires, or unnecessary demands.

The entire situation boils itself down to an alternative between conservation, preservation, or ultimate inability to meet the demands for replacements, to say nothing of new structures. The entire industrial situation is bound together so tightly that a slump in one tends to pull the others down with it. Upon conservation depends much of the industrial prosperity of the next generation.

None of this is "scare-head" stuff but sober fact. It need not be alarming, indeed, it is not, for people all over the country are joining the movement toward preservation of structural materials. It is well, however, to realize the conditions as well as the opportunities available to combat them.

How to Decorate the Bedroom

HAVE you ever been ill or recovering from an accident and, unable to rest or sleep, forced to stare at walls the pattern or design of which became unbearable through frequent repetition? The endless tracing of the figures is maddening.

Annoying as is such a system of bedroom decoration, it illustrates a very important truth, the influence of our surroundings upon our spirits and health. Medical authorities recognize the nerve racking tendency of such decoration. It is to avoid this nervous irritation as well as to secure washable, sanitary walls that doctors insist upon having hospital interiors finished with paint.

Inversely, this serious drawback of the one method brings out strongly an attribute of the newer decorative techniques, their interest. Finishes produced with them are the very spirit of spontaneity, an ever changing play of color in and about a design that the eye never tires of following. This feature, together with their healthfulness, artistic beauty, unlimited variety, modest cost and easy cleaning virtues, is in considerable measure responsible for the vogue among home owners which has been set in their favor. In this article, appropriate finishes for bedrooms are considered with special reference to stippling, border stenciling, dados and two toning, also various combinations of two or more of these methods.

Bedrooms are for rest and sleep. Everything about them should contribute to tranquility. The permissible brightness of the decoration depends on the location of the room, while the character should be expressive of the person occupying the room.

A room for the mistress of the house, a chamber with eastern exposure having white curtains worked in pink, with ivory furniture, might be made into a very successful room by selecting a pink treatment for the walls in stippled effect. Ceiling would be lighter ivory than the furniture and the woodwork darker. A narrow moulding of proper

yellow hue might finish the walls at the angle of the ceiling, while the varnished floor would be partly hidden by a rug of blue gray.

Stippling is interesting, much more attractive than plain brushed walls, and enables the decorator to control values according to the color of the ground on which the stippling is done. In the room described above, for instance, the ground color of the walls would be a deep ivory and the stippling coat a light pink.

When a bedroom has a high ceiling, it is a good idea to carry the ceiling color down the walls all around as far as the tops of the window casings, forming a frieze which can be finished with a moulding or a simple line of color.

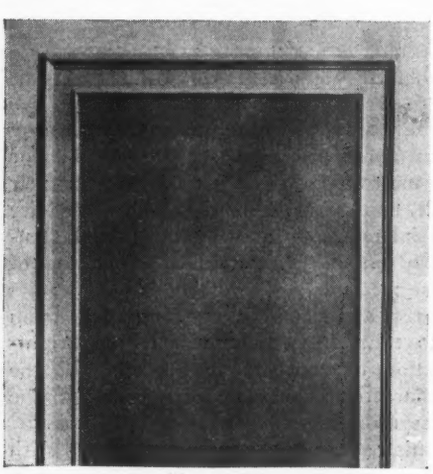
The walls of the guest room on the north side of the house (chintz hangings and walnut furniture) should be finished in one of the light, warm tones of the hangings. A stippled finish in golden yellow done on a darker shade of the same color would give the guest a sunny welcome.

As bedroms are shut off from each other, each room may be considered independently, but it is safe to adopt the same method of treatment for all bedrooms, at least all those located on the same floor. Colors may vary according to size and location of the room, and preferences of the occupant.

A Restful Charming Bedroom in Excellent Taste. Painted walls broken with panels form an ideal background.

We are coming more and more to appreciate the effect of our environment upon our happiness and to be sure that the subtle but powerful influence it exerts is of a cheerful and fitting nature. To be specific, the northwest room, occupied by the dark-haired girl, demands treatment in bolder colors than does the room that looks southwest wherein her fair-haired, blue-eyed sister sleeps. In this "fitting" of a room to its occupant the mobility of paint as a decorative material is a great advantage and one not found in any other material.

For the girl's room paneled walls and border stencils work up interestingly. The sleeping-room on the northwest that gets little if any sun would be pretty with walls stippled in bright straw yellow with a border stencil of floral design done in orange yellow. The mahogany furniture would be set off with rugs and hangings of sunny yellow and wood-trim in cream enamel.



Paneled Walls Are Appropriate for Bedroom Decoration, Especially if the Space Enclosed by the Panel Moulding Is Painted to Contrast with the Field. Shading, stippling or mottling within the panel produces interesting effects.

The southwest room might have light blue walls with stenciled decoration of ribbons and flowers done in light gray. On the furniture, painted French gray, the stencil decoration is repeated in miniature, using the blue of the walls. The dominating color in the rug is a shade of blue deeper than that of the walls. Hangings are white with blue borders. The wood trim is a lighter gray than the furniture. The blue walls are either stippled or paneled; if paneled, the mouldings and stiles are done in grays. Paneling would add much interest.

The master's large bedroom with a southern aspect might have walls finished in a two-tone figured effect of light cool green that leans toward olive. The furniture would be of the darker woods, brown mahogany or walnut. Deep ivory woodwork and a dark green or dull brown rug with simple tan drapes would complete it.

If the master's room is in the north of the house the walls may be paneled in shades of buff, with cream woodwork, maple or light mahogany furniture and a maroon rug. If panels are not favored, the walls may be finished with a border stencil and stippling, using rich golden yellows, or with a two-tone finish in these colors.

In the decorating of children's rooms and sleeping porches, where chances of injury to the wall finish are great, a dado will be serviceable. Done in a gloss paint, which is easily cleaned, it can be economically repainted without doing over the upper walls if the finish becomes badly stained.

Sleeping porches, usually opening off a west or south bedroom, should harmonize with the decoration of the bedroom they adjoin. Due to the number of windows and brilliance of light, the porch interior should be slightly darker than that of the bedroom.

Children's rooms offer an excellent field for stencils, especially in the home without a nursery. Frolicking children, animals, windmills, and clowns, flowers and domestic fowls are suitable designs.

✣

Coral Gables Exhibit in New York

AN exhibit of the adaptation of Spanish architecture which has been employed in the development of the beautiful Coral Gables near Miami, Fla., was shown at the recent Exposition of Architecture and Allied Arts in New York City. This exhibit was under the supervision of George Fink, A. I. A., who has been prominent in this work of adaptation.

A temporary office of the Coral Gables Miami Riviera has been opened in New York, in the lobby of the Biltmore Hotel, and a permanent office will be opened later.

Modernized Store Buildings Get the Trade

Metal Store Fronts, Plate Glass Windows and Prism Transoms Add to the Value of Attractive Displays

This Jewelry Store in Dixon, Ill., Is a Good Example of What Store Front Remodeling Can Accomplish. Note the marble base, the metal store front, the plate glass, the prism glass transom with merchant's name in colored glass and the mosaic tile entrance.

SUCCESSFUL merchants have all learned the value of attraction—the magnet which draws trade. Not only must the goods be attractive, but the settings and surroundings must also harmonize. Fine furniture and fabrics, nor any other merchandise, will not sell as readily when poorly housed, with the possible exception of antiques.

In place of the old fashioned, poorly lighted shop with restricted window display space—unattractive inside and out—the merchant who today expects to meet competition and draw profitable trade takes advantage of the best the builder has to offer.

The improved appearance of modern stores and business blocks is due in great part to improvements by manufacturers in building material and specialties. Metal store fronts, prism transoms, decorative and illuminating glass are important developments and absolutely necessary to successful window displays. Plate glass has been wonderfully improved—brought to a transparent clearness that is without color or blemish—and allows unclouded vision through the glass. At night or on dark days, special electric lighting devices are on the market

Another Fine Example of a Remodeled Store Front. This is the store of A. Bishop & Company, hats and furs, Chicago. Fine masonry, metal store fronts, the extensive use of prism glass transom lights and fine plate glass windows combine to produce the desired modern effect.

The Lincoln Market Block, Chicago, Shown Above, Is a Fine Example of the Community Store and Office Building. This handsome business block is built of brick with fine terra cotta trim, ornamentation and red Spanish roof tile. Both the Clausen Construction Company and the J. Schworn Company, builders, have offices in this block.

which effectively illuminate the window display. In fact, miniature stage lighting effects are created.

Prism transoms are usually made up in symmetrical panels and, while primarily for the purpose of bending the light rays and projecting them towards the store interior, have distinctly decorative value. Translucent glass, set in decorative panels, is frequently used where prism illumination is not essential. Signs are furnished in both forms of glass with white and colored glass lettering set into the transoms.

An interesting story—from a building and real estate point of view—has come to our attention along with one of these store pictures. The hardware and real estate stores shown are housed in a recently completed business block. This block of stores was erected in an outlying but rapidly growing section of Chicago. Vacant lots were more frequent than buildings; in fact, it was built practically "out on the prairie." The promoter, Frank P. Murphy, built sixteen stores in this block. Without advance leases of any kind, he had set in each prism glass front a permanent sign designating what each store was to be—

This Picture Shows Two of Sixteen Stores in a Block Built "Out on the Prairie," but Quickly Leased. A clever use was made of transom lights and ornamental glass signs which helped in achieving this result.

The One-Story Block of Stores in This Picture Was Photographed Just Prior to Completion. Note the unusual attractiveness of the terra cotta ornamentation, metal store fronts and prism transoms.

J. H. Ireland's Oyster House in Chicago Is Shown in the Picture at the Top. The brick red tile linoleum floor with cream interliners looks well with the mahogany paneling and fixtures, as well as the terra cotta and buff of the stucco walls.

Carved stone, face brick, concrete masonry and decorative terra cotta, as well as bronze, brass and architectural iron work, are effective in giving a pleasing appearance to business blocks and store buildings. Even a one-story building can be made quite impressive by the use of fine building material.

Inside the store, fine finish, as well as attractive displays of merchandise, are effective in playing their part in sales psychology. Rich woodwork and paneling effects add tone to restaurants, jewelry, millinery, confectionery shops and similar establishments. Fine plaster work, tinting, decoration, painting and varnishing can be skillfully used to create a favorable effect upon buyers.

The Picture to Left shows a Shoe Store Which Does Not Look the Part. Dark gray jaspe linoleum floor, soft carpeted, wide stairway, and oriental rugs, produce a pleasing effect with the decorative ceiling panels and pillars.

Maximum Display Space with Minimum Footage Is Obtained in the Compact, Well Arranged Drug Store of Matthews and Carpenter in San Luis Obispo, Calif., Shown in the Lower Picture. The parquetry tile linoleum floor has a definite decorative value.

hardware, grocery, bakery, barber shop, etc., all down the line. Of course, care was taken to avoid duplication and to have a variety of stores which would include practically all the needs of the community.

This idea was immediately successful and the stores have all been rented at profitable figures. Intending merchants were quick to see the advantage of being in a new and growing community, but, at the same time, having absolute assurance that a competitor in the same line would not open up within a door or two.

The metal store front with marble base presents a handsome and pleasing appearance, especially when surmounted by plate glass and decorative prism glass panels. Prism glass can be had which diffuses the light in a pleasing manner rather than deflects it in concentrated rays.

Two of the finest looking store fronts illustrated in connection with this article are remodeling jobs, which suggests what can be done to make old stores attractive.

Needless to say, the builder who provides the best stores and business blocks will benefit either directly or indirectly by their ready rental or sale.

Build Hall Clocks for Profit

A Specialty as Fill-in Work for the Dull Periods in Building Construction

ALTHOUGH the seasonal character of the building industry is being lessened rapidly by the campaign for year around building, there are times when the builder finds work slack and days when he must be idle. A specialty line which can be used to fill in such slack periods is a valuable asset for increasing the year's profits and a number of these are open to every builder.

One which offers an opportunity for a most satisfactory addition to the income is the making of "Grandfather" or hall clocks.

Hallclocks may be built in an infinite number of styles from the most simple and inexpensive up to the most elaborate pieces of cabinet work which bring fancy prices. Works for these clocks may also be obtained at a broad range of prices to suit every pocketbook. There is a company, well-known clockmakers, which makes a specialty of furnishing these works and also supplies blue prints, bills of material and instructions for making a large variety of cases.

One of the more simple designs which can be effectively used is illustrated here with drawings and a photograph of the completed clock. These drawings, with the instructions, should enable a good workman to produce a beautiful and valuable piece of furniture.

The Hall Clock Possesses a Distinctive Personality Which Radiates a Homelike Air.

In each instance where inch lumber is mentioned it is understood to mean 1-inch boards planed on both sides, approximately ⅞ inch thick. First provide the two side pieces from inch lumber, 12¼ inches wide and 70 inches long. Slightly round the front edges and rabbet the back edges ¼ inch deep.

Next provide the top and bottom boards from inch poplar. The two back pieces should be made of built-up panel stock, preferable birch, ¼ inch thick and 17 inches wide. The length of each of these two pieces is determined by the position at which the strip between them is placed and this must be low enough to accommodate the movement selected. It is, however, approximately 12 inches from the top and is made of 1-inch poplar, 3 inches wide and 17 inches long. Both edges are rabbeted and it is screwed in place as a brace for the case and an edge support for the two back boards. The inside edges of the ends must be rabbeted to fit in between the sides of the case.

Now build the door to fit the frame. The side rails and top are 2 inches wide and are rabbeted inside, ½ inch wide and ⅜ inch deep, to hold the glass which is fastened in place by strips approximately ¼ inch by ¼ inch. The center door rail should be 2½ inches wide and the lower rail 4 inches wide.

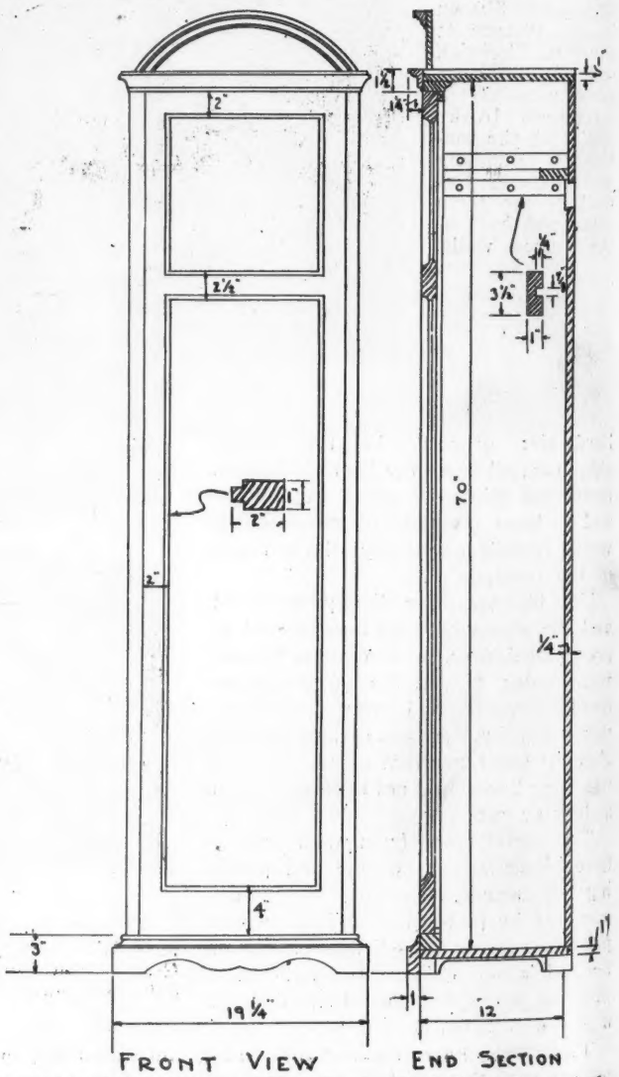
The lower moulding and sides should be 1 inch stock, 3 inches wide, the upper edges moulded and lower edge bandsawed, as indicated in the drawing. Upper mouldings should be 1½ inches high and 1¼ inches thick. Top and bottom mouldings are mitered. The door stop moulding should be ⅜ inch by ½ inch around the inside of the door.

A filler strip 1½ inches wide and 1 inch thick, finishes off the inside bottom of the case under the door and provides a sill for the lower door strip.

The bottom is screwed to the lower edge of the sides with No. 5 wood screws 1½ inches long and corner blocks are glued in the four corners, reinforcing the lower moulding. The top is similarly fastened to the upper edge of the sides, but no corner blocks are required at the top.

Two movement supports consist of 1-inch poplar screwed to the sides, inside the case. These should be 3½ inches wide and grooved through the middle of their entire length ½ inch deep and ⅞ inch wide. Movements are furnished mounted on boards which slide into these grooves.

The reason for making the back in two pieces is to offer ready access to the movement by removing the upper section of the back, which is held in place by two ⅞-inch screws on each of its four edges.



Drawing for Making a Hall Clock Which Is One of the Simpler Styles but Makes an Attractive Piece of Furniture.

WHAT'S NEW?

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De Luxe Bathroom Cabinet

ONE of the latest perfections in bathroom fixtures is a de luxe cabinet. This is an all steel and glass cabinet the body being pressed from one piece of sheet steel. The finish is a special white which will not stain and is not affected by acids. The mirror in the door is framed in a hand-rubbed black which offers a pleasing contrast to the white of the body.

A wing mirror is attached at each side and an electric fixture is mounted on each wing. The wings are adjustable to any position and the lights flood the mirrors, without glare. An electrical receptacle is located just below the door to supply current for electrical appliances and a small toggle switch, to control the lights, is placed at the bottom of the cabinet.

On the interior, the shelves are of heavy crystal glass with round bulb edges and there is a locked compartment 12 inches high and 8¼ inches wide which forms a safe repository for poisons or articles of a private nature.

This cabinet is mounted in a wall opening in the usual manner and can be installed in plaster, marble, tile, or vitrolite walls. All wiring is concealed and is approved by the Underwriters' Association. The connection is made by removing two screws and withdrawing the steel switch box at the bottom of the cabinet.

A De Luxe Bathroom Cabinet with Wing Mirrors and Electrical Wiring for Lights and Appliances Is Finished in White. It will not stain and is not affected by acids.

Complete, Compact Woodworker

RECENTLY placed on the market, by a leading manufacturer of woodworking machinery, a new woodworking machine is exceptionally small and compact while, at the same time, unusually complete and well constructed. It is intended to meet the demand of woodworkers for smaller handier woodworking machinery operating in the same manner as the familiar large machines.

This machine is a complete unit with self-contained power plant operating from a light socket, eliminating the need of special power wiring, and small enough to set up in a basement.

This Woodworker Was Designed to Afford a Small Handy Machine Operating in the Same Manner as the Familiar Large Machines.

The saw table is of one piece cast iron, 19 by 36 inches, ribbed construction, smooth and accurate. It is hinged at the back and raised or lowered by a hand wheel and screw-elevating device. It is planed at the top for the mitre cut-off gauge. Circular saw and jointer are on separate mandrels enabling separate operation and the mandrels are threaded for affixing attachments, moulding heads, groover and dado saws.

Rip and cross-cut saws of 8-inch diameter are furnished and will cut to a depth of 1½ inches. The jointer is of safety cylinder type furnished with chip breakers and high speed, steel knives 6 inches long. The band saw is operated on 18-inch cast iron wheels covered with rubber band. The upper wheel has a swivel and tilting adjustment for aligning blade and compression spring for regulating tension. Safety guards are provided on band saw, jointer and circular saw.

✣

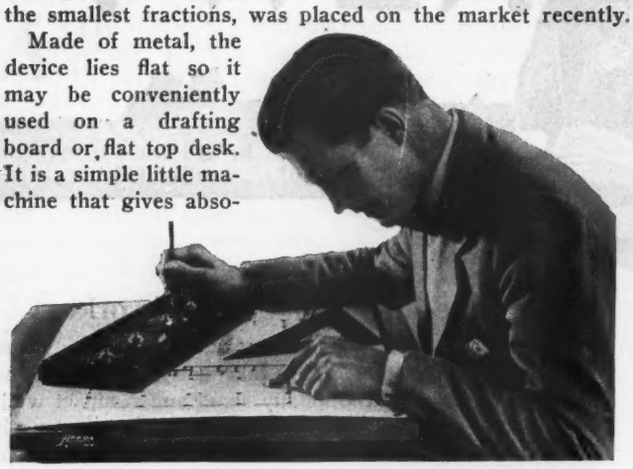
Non-Renewable Cartridge Fuse

ONE of the fuse manufacturers has just announced an addition to its line in the form of a non-renewable cartridge fuse. This fuse is built in all standard sizes from 0 to 600 amperes and is fully approved in both 250 and 600 voltages. Like the other fuses in this line, this is a powder-packed, time-limit fuse.

Portable Adding Machine

FOR use by draftsmen, architects, engineers and others who work with many numbers of measurements, an adding machine that calculates in feet and inches, including the smallest fractions, was placed on the market recently.

Made of metal, the device lies flat so it may be conveniently used on a drafting board or flat top desk. It is a simple little machine that gives absolutely correct results in checking plans and eliminating much tedious detail in this work, removes any possibility of error and saves, on an average, three-fourths of the time ordinarily required to perform the computations, it is said.



Time Is Saved in Making Calculations in Feet and Inches, Including Small Fractions, by the Use of a Portable Adding Machine Recently Placed on the Market.

The machine sums up large sets of figures in a few seconds, is easily operated and is light and compact so that it can be readily carried from place to place. In industrial plants and in structural work the adding machine can be used to promote accuracy and to save time.

The device really is a portable adding machine for the addition of lineal feet, inches and common fractions and is the only one designed solely for the drafting room. It can be operated for numbers up to 4,899 and is being profitably used by architects, draftsmen, engineers, machinery manufacturers, boiler manufacturers, pipe designers, contractors and many others.

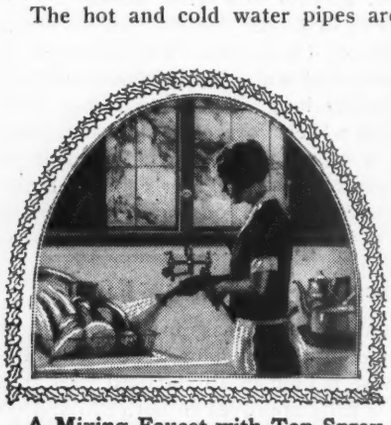
RHYS G. THACKWELL.

✣

Tap and Spray Mixing Faucet

DEVICES which help to eliminate the drudgery and unpleasant features of housework have, of late years been making their appearance in large numbers and more are being perfected every day. One of the recent additions to this group is a combination sink faucet which is a real convenience for washing everything from vegetables to dirty pans. With it water of the right temperature is always available and it is not necessary to have one's hands in the water for the cleaning up.

The hot and cold water pipes are connected to a single tap so the water can be mixed to any desired temperature. In addition to this a rubber hose, terminating in a spray is attached just above the tap and may be used in place of it. It is this feature which keeps the hands out of the water. A bracket is provided just above the faucet so that the hose may be hung out of the way when not in use.



A Mixing Faucet with Top Spray Is a Labor-Saver for the Kitchen Which Will Be Appreciated by Every Housekeeper.

✣

Light, Low Price Auto Trailer

A LIGHT weight low price trailer, which can be hooked onto the car or truck for handling mixed loads or for hurry-up delivery is a great convenience for loads up to 1,000 pounds. Such a trailer, equipped with pneumatic tires and with properly designed hitch for the trailer tongue, places very little additional pull on the car and if the car is well driven, does not strain it.

The body, which measures 40 by 72 inches high, has front and rear end gates which are quickly removed by loosening the tail handle nuts. The sides are also removable. This body is built entirely of hardwood and painted a durable dark gray. Springs, shackles, wheels and tires are of the Ford type and the tongue is a malleable steel casting with ¾-inch steel pin. The axle is 1½-inch round, chrome nickel steel.

Light and Low Priced, This Trailer Will Pay for Itself in a Hurry and the Extra Load on Truck or Car Will Not Injure It in Any Way.

✣

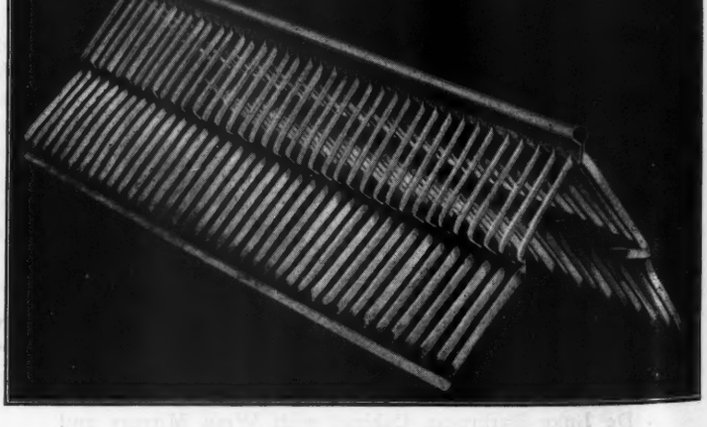
Expanded Metal Corner Bead

PROTECTED and reinforced corners are provided for in the development of a new corner bead of expanded metal. This bead definitely reinforces the corner and produces a stronger plaster surface there than anywhere else in the wall according to the manufacturers. The wide wings with their specially twisted strands produce strong, well-formed keys of plaster entirely surrounding the nose.

The bead is rigid lengthwise of the strip as well as crosswise and the wings always remain at the proper angle to the nose. This rigidity is an advantage both on and off the job, as the bead will stand handling in the warehouse even though removed from the crate.

The wide wings, three inches from the center of the nose to the outside of wings, make it easy to fasten on any kind of a ground without the use of clips. The bead is simply anchored at the most convenient points. The center rib gives a rigidity which makes it possible for a man to place the bead at a corner without any possibility of buckling or twisting.

This bead is made of tight-coated galvanized sheets and furnished in lengths from 6 to 12 feet. It is shipped 75 pieces to a crate in all lengths.



Where This Bead Is Used for Reinforcing Corners It Produces a Plaster Surface That Is Stronger Than Any Other Point in the Wall.

Bores Holes in Solid Rock

BORING holes through solid rock is the latest development in earth boring machines. The boring-through-rock experiment was made by a gas and electric company

Here Is a View of the Auger at Work Boring Through Solid Rock, an Application Which Is New but Wholly Successful.

which is erecting a high power transmission line over a stretch of particularly hilly and stony country.

In the work of digging the holes for the tower abutments many different sizes of augers are used. First, the 48-inch auger is used to bring the working level of each corner to the same plane. Because of the hilly nature of the country this work sometimes requires considerable digging with the big auger. Next, a 24-inch hole is dug about 3 feet deep at the bottom of the 48-inch hole. (This is later filled with concrete after the corner post has been set.) Below the 24-inch hole an 8-inch hole is dug 11 feet deep at an angle of 9 degrees from the perpendicular.

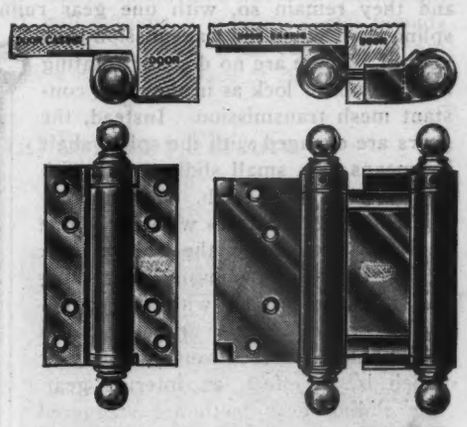
In digging the 8-inch hole a layer of rock varying in thickness of 1 foot to the depth of the hole is very frequently encountered. In these instances the first operation in boring the 8-inch hole is to bore a 1¾-inch hole through the rock the required depth. A 1¾-inch drill is attached to the auger shaft and the hole is drilled through the solid rock at the rate of almost a foot in 10 minutes. In one instance where the rock extended the full length of the 11-foot hole, the hole was drilled in 2¼ hours. (Such a hole drilled by hand methods would require three men 3 or 4 days.) After the 1¾-inch hole is dug it is shot with dynamite and then cleaned out with an 8-inch auger. The cleaning out process requires but a few minutes.

✣

Single and Double Spring Hinges

A NEW spring hinge, in both double and single action, supplied in sizes from 3 to 8 inches, is designed to be applied directly to the door casing without the use of a jamb hanging strip.

The double acting hinge is applied with the entire thickness mortised into the door and the jamb flange attached to the surface of the door casing without any mortise cut being made. The single acting hinge is applied with the flanges mortised into both the door and door case, just as springless hinges are applied, or the entire thickness of the hinge may be mortised into the door and the jamb flange applied to the surface of the door casing.



These Hinges Are Designed to Be Applied Directly to the Door Casing Without the Use of a Jamb Hanging Strip.

The web and barrels are made of one continuous piece of metal formed so that the web portion has three thicknesses of metal and the barrel only one. This feature gives sufficient strength to the web and permits a barrel with small outside diameter but large enough to carry a powerful spring.

✣

New Rotary Mail Box

A NEW mail box, designed to take care of old apartments and family hotels where remodeling would be required to accommodate the large mail boxes required under the new ruling of the Post Office Department, has been devolved and has received the approval of the Postmaster General. It can also be used to save space in new buildings. This is a rotary box providing for 36 apartments with three tiers of boxes and 12 boxes in a tier. Each box is 16 inches high.

The carrier unlocks the government lock on top of the cabinet and lifts the lever. All boxes in the cabinet tilt out. He then rotates the box and puts in the mail where he stands. Each individual box has a door which opens the full length of the box and is locked at the side so the large pieces of mail can be easily removed as well as put in. This cabinet is 20 inches in diameter and about 5 feet high.

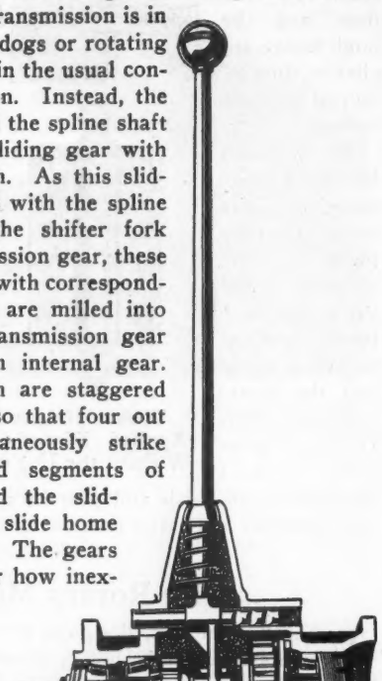
A Rotary Mail Box Which Meets the New Postal Requirements and Can Be Installed in an Exceptionally Small Space.

This cabinet is also made for a corner installation where three, six or nine boxes are operated in the same way in a very small space. The rotary cabinet is bolted to the floor, in a corner or wherever most convenient, and requires very little space and no expense for remodeling.

Selective Transmission for Fords

A NEW selective type transmission gives the Ford car or truck four speeds forward and two reverse, at the driver's option.

The big feature of this transmission is the perpetual engagement of the gears. They are meshed at the factory and they remain so, with one gear running free on the spline shaft when the transmission is in neutral. There are no dogs or rotating keys to jam or lock as in the usual constant mesh transmission. Instead, the gears are engaged with the spline shaft by means of a small sliding gear with twelve half-round teeth. As this sliding gear, which rotates with the spline shaft, is moved by the shifter fork against the idle transmission gear, these half?round teeth mesh with corresponding depressions which are milled into the shoulder of the transmission gear which is, in effect, an internal gear. The sliding gear teeth are staggered for indexing, that is, so that four out of the twelve simultaneously strike against four extended segments of the gear shoulder and the sliding gear is allowed to slide home noiselessly and surely. The gears cannot clash, no matter how inexperienced or careless the driver may be.



The Flexibility of Ford Cars and Trucks Is Greatly Increased by the Installation of This Selective Transmission.

The transmission was designed primarily for the Ford Model T chassis, so that it is ideal equipment not only for the passenger car but for the light delivery car as well. With special truck fittings it is also used on the Model TT truck.

The three-point suspension, which has contributed so greatly to the success of Ford cars, has been carried out in the new transmission.

✣

Water-Proof Cement Paint

A WATER-PROOF cement paint has been developed which has a number of points which recommend it for varying uses. It is a fine, dry powder which, when mixed with water, forms a paint that both decorates and waterproofs concrete and other masonry surfaces and keeps them permanently dry and attractive. It can be used on stucco, plain concrete, brick, tile, masonry and structural iron, pipes,, tanks, etc. It will not adhere to a non-porous surface such as glazed tile, and glazed brick.

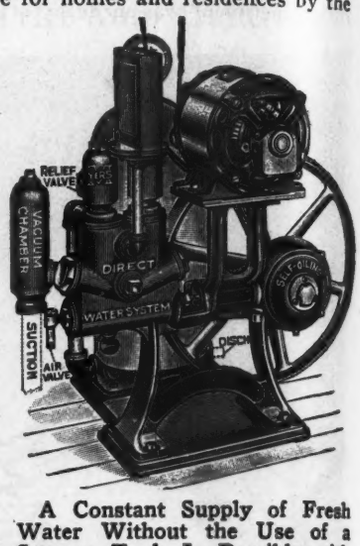
This paint can be applied to a wet surface; in fact, the surface should be wet down before applying both the first and second coats and in warm or dry weather. After each coat the newly painted surface should be gently sprayed as the paint hardens.

By the use of this paint leaking of basement walls can be entirely stopped and outside walls are given a bright attractive finish which is not affected by rain or weather. It has the characteristics of hardened cement and will not rub off on the hand or clothing. It is supplied in white and six other colors which can be mixed to produce any desired tint.

Residence Water Pumps

AN always fresh supply of water, directly from the well or cistern, is possible for homes and residences by the use of a new pump system. This pump is supplied complete, ready to merely connect the discharge to the house line and operate.

This pump eliminates the need for any storage tank. It operates direct, power being supplied by a ¼-H. P., 110-220-volt motor. Cost of operation is low because the system works under the comparatively low pressure of 10 to 30 pounds. The capacity is 300 gallons an hour and the opening of any faucet in the system starts the pump so that it is never necessary to wait for a water supply.



A Constant Supply of Fresh Water Without the Use of a Storage Tank Is Possible with This Complete Pump.

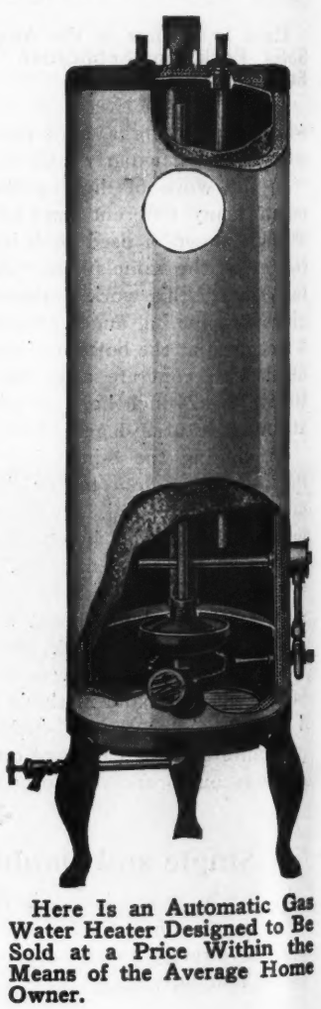
✣

Automatic Gas Water Heater

THIS automatic gas water heater has been designed to meet the demand for such a heater at a price within the means of the average home owner. It will give a continuous supply of hot water at a low upkeep and gas cost as well as having a low cost for the original installation. It is entirely made in one factory and this, with large volume production, makes the price possible.

It is automatically controlled by a new type of dual action, thermostatic valve. This is self-adjusting to different quality and varying pressures of gas and controls both the pilot or carrying heat and the burner. It is fully insulated so that no wasted heat is thrown off. If the hand is placed on any part of the heater it will be found to be only slightly warm though the water in the tank and pipes is at 160 degrees.

All adjustments are made at the factory and permanently set. The heater is easily installed, requiring only one gas and two water connections. It is made in four sizes, the small family size adapted to small homes, bungalows, apartments, barber shops and beauty parlors; the family size adapted to houses requiring a good volume of hot water; duplex house size; and a heavy duty size for apartments and clubs.

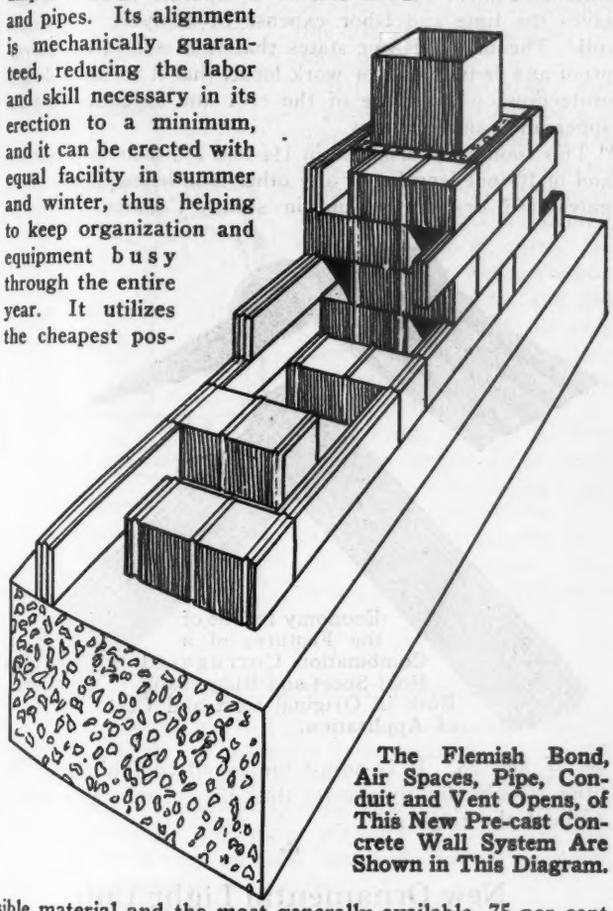


Here Is an Automatic Gas Water Heater Designed to Be Sold at a Price Within the Means of the Average Home Owner.

Pre-Cast Concrete Walls

A PRE-CAST concrete system of wall construction has just been developed which incorporates a number of interesting features. The material is disposed after the manner of placing steel in columns to develop maximum strength; and staggered air spaces reduce the travel of moisture, heat or cold and sound, from face to face of the wall, to a minimum.

A Flemish bond gives a most pleasing joint texture and ample facility is offered for the placing of vents, conduits and pipes. Its alignment is mechanically guaranteed, reducing the labor and skill necessary in its erection to a minimum, and it can be erected with equal facility in summer and winter, thus helping to keep organization and equipment busy through the entire year. It utilizes the cheapest possible material and the most generally available, 75 per cent being locally available practically anywhere.



The Flemish Bond, Air Spaces, Pipe, Conduit and Vent Opens, of This New Pre-cast Concrete Wall System Are Shown in This Diagram.

✣

Pivoting Sink Stool

THE latest feature for the convenient kitchen or kitchenette is a pivoting sink stool which is always handy but never in the way. It is easy to install, only a screwdriver and a plumb being used. A base socket is screwed to the floor in the desired location, just under the sink. The base of the seat frame is then placed into the socket and the upright rod plumbed about three degrees toward the wall and the center of the seat opening. The "L" shaped top socket is then screwed to the sink siding or rear of top rail. It must be screwed tightly, for all the weight centers at this point.

A Pivoted Sink Stool Which Automatically Swings Out of the Way When Not in Use and Is Strong Enough for Any Normal Load.

The object of fastening the top socket three degrees out of plumb is to make the stool swing out of way, automatically, when not in use. A few drops of oil in the base socket insures perfect operation. This stool is built of steel with aluminum luster finish and has a wooden seat, enameled white. It will support a weight of 500 pounds at an acute angle. It fits any sink from 32 to 36 inches in height and requires a minimum space of 20 by 26 inches.

✣

Metal Bracket Fixture

METAL attachments by which the common type of wood brackets may be converted into folding brackets with considerable reduction in weight have recently been put on the market.

These consist of steel angles, which provide support for the inner end of the horizontal 2 by 4, a loose hinge device which connects the outer end of the horizontal 2 by 4 with the upper end of the diagonal, and a strong chain which connects the lower end of the diagonal with the inner end of the horizontal, thus forming the complete triangle.

Folding Brackets Which Effect a Considerable Reduction in Weight Are Possible Through the Use of Metal Attachments Which Have Been Lately Devised.

The two pieces of 2 by 4 may be folded flat on each other, by the use of the loose hinge and the substitution of the chain for the vertical 2 by 4. This allows much easier handling on the job, and a large saving in the space required for moving from job to job and for storing when not in use.

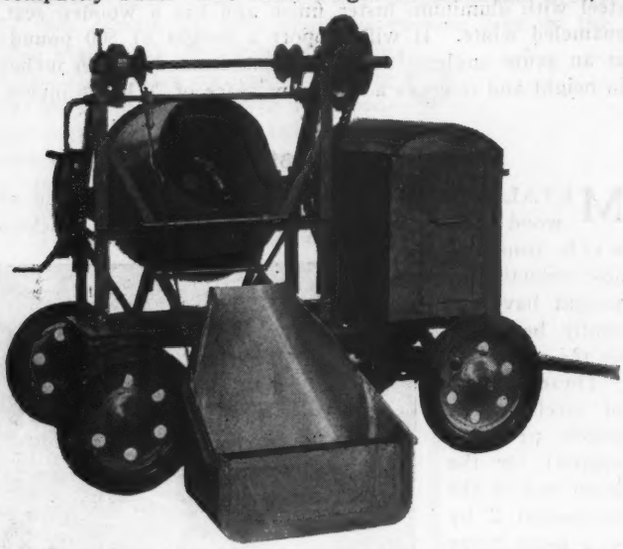
Tests by one of our state universities have proven the strength on the building to be sufficient to support the weight of 16 average carpenters between two brackets, providing a large margin of safety under ordinary use, according to the report of the engineers.

Thirty penny spikes are driven through holes in the steel angle through the siding or sheathing into the studding, making such a firm connection with the framework of the building. By this method safety is accomplished with the minimum of time, as one man can put up the bracket without help. The firm contact of the wide steel angle against the side of the building prevents side-sway.

The bracket is removed from the building when the job is done by forcing the steel angle upward until the large end of the elongated holes allow the angle to pass over the heads of the spikes.

Heavy Half Bag Tilting Mixer

A ONE-HALF bag tilting concrete mixer with a side loader is now, for the first time, being made by one of the well-known manufacturers. This machine is unusually heavy built for a machine of its size, and is also most compactly built. The total weight of the mixer is 2,000



Built for Hard Service Is the Description of This Half Bag, Tilting Mixer with Side Loader Made by a Well-Known Manufacturer.

pounds and its height is 6 feet. It comes equipped with 24-inch cushion tired disc wheels, but Goodyear, heavy duty, puncture proof tires can be supplied if desired.

An oversized drum, 31 by 28 inches, is used and power is furnished by a 3 horsepower engine. This power equipment is more than sufficient to meet all requirements of a mixer of this size on an average job. The skip is quick operating and raises and dumps within 10 seconds. The entire finish and equipment of this machine is high grade throughout and the price is in line with the average machine of this size.

✣

Switch to Control Oil Burners

A MOTOR program switch is a unique control unit particularly adaptable for oil burner control. It is designed to be operated by low voltage thermostats, either room or boiler control, or in combination. Its use is recommended on oil burners which require a definitely timed and set program of operations in the starting and stopping of the burner. It can be furnished with either one or two electrical switches, each of 10 ampere capacity. These 110-volt switches, by means of specially designed cams, can be made to close and open electrical circuits according to any required program. Auxiliary apparatus, such as gas and oil valves, can be controlled by one, two, or three extended shafts, all equally timed and revolving at the same speed.

A Control Unit for Oil Burners Operated by Low Voltage Thermostats Incorporates a New and Important Development.

This switch can be furnished with varying gear ratios, giving a range of operating periods to meet particular requirements from 30 seconds up to six minutes.

A new and important development is represented in the recycling model of the switch providing a means to completely recycle the switch after any interruption in the power circuit, re-igniting the burner by putting the program switch through its complete ignition cycle. This new feature is of the utmost importance with burners utilizing expanding gas pilot flames or electric ignition.

✣

Solid Roof Sheet and Ridge Roll

A CORRUGATED metal roofing sheet and ridge roll, in one solid piece, is now being marketed which eliminates most of the cost of a separate ridge roll and saves the time and labor expense of applying a separate roll. The manufacturer states that it is absolutely storm-proof and cannot leak or work loose, that it forms a double protection on the ridge of the roof and is unexcelled for appearance and economy.

This roofing is furnished in 1¼ and 2½-inch corrugations and in 10-foot lengths, or any other lengths required, either galvanized or painted and in standard gauges Nos. 24,

Economy Is One of the Features of a Combination Corrugated Roof Sheet and Ridge Roll, Both in Original Cost and Cost of Application.

26, 27 and 28. It is adjustable to all roof pitches. The price is only slightly greater than that of the same roofing without the ridge roll.

✣

New Ornamental Light Unit

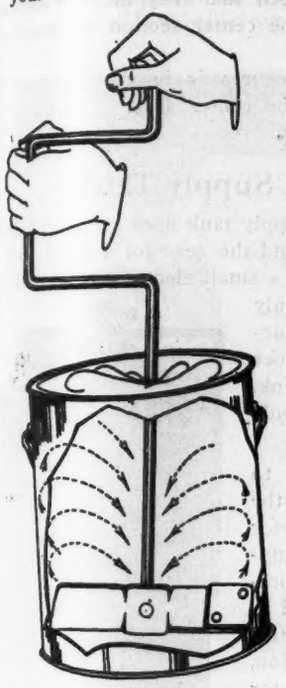
BEAUTY is combined with efficiency in a new lighting unit which has just been brought out by one of the fixture manufacturers. The glass bowl, shaped like an inverted mushroom, extends above the metal ring so that a portion of the light is diffused upward, resulting in a bright ceiling. A single, large voltage, Mazda C lamp supplies the light.

The cast brass ornamental ring, of Italian Renaissance design, is rich in detail and affords wonderful opportunities for the effective use of color. The manufacturers recommend this unit for fine stores, offices, hotel, theaters and other locations calling for decorative fixtures.

An Italian Renaissance Unit for Fine Stores, Offices, Theaters, Hotels or Any Place Demanding Decorative Light Fixtures.

Paint Mixing Tool

IF it takes two hours to properly mix a batch of paint and you have an average of three batches a day, and pay your men one dollar an hour, it costs six dollars a day or $1,800 a year to mix your paint. If the same work could be done in forty-five minutes a day the year's expense would be only $225, saving of over $1,500 a year. Such a saving is said to be possible through the use of a new mixing device, or agitator.



Time Saving is the Basis on Which This Paint Mixer Recommends Itself, Which Also Means Cost Saving.

It resembles an auger with a paddle blade at the bit end. This blade is weighted at one end so that it can be inserted endwise into the container, through a small opening. When rotated it opens, the weighted end scraping the bottom and the lighter end following the sides of the container. The result is a thorough mix, easily accomplished in a short time.

The mixer is made in three sizes, the largest to fit wood barrels, steel drums and half drums, the next size for five-gallon packages and the small one for one gallons. The three sizes are packed together as a unit.

✣

Automatic Seepage Drainer

IN office building, residence or factory basements, elevator pits, scale pits, or wherever it is necessary to remove seepage water from a point below the natural drainage level of the sewer, an automatic drainer is required. A new one, which operates by city water pressure or steam, is now being made in a very compact form and with an automatic action which requires no attention.

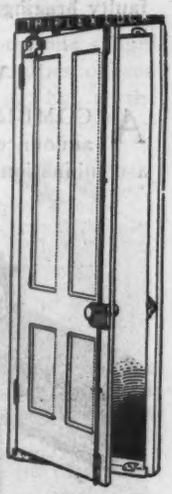
It is installed in a sump below the level of the surface to be drained, covered by grating, and the only parts above the surface are the water supply pipe and pipe for discharge to the sewer.

Whatever Water Must Be Removed from Below the Drainage Level This Automatic Drainer Will Be Found Most Serviceable.

The sump should be so placed that all surplus water will drain into it and may be constructed of cement, brick, sewer crock or other suitable material. The drainer valve is normally in a closed position. As the water rises in the sump it lifts a float until the valve is opened and the ejector started. The ejector pumps rapidly until the level of the water is lowered to a point where the descending float closes the valve. The drainer then remains inactive, using no pressure water. The operation is the same where steam is used in place of water pressure.

Three Bolt Door Lock

AS a result of years of expreimental work a door lock is now being produced which is said to be absolutely burglar-proof. According to the manufacturers it is impossible to break through a door equipped with this lock except by taking the door out in pieces. It can be applied to either single or double doors and is suitable for homes, stores, post offices, banks, and, in fact, any entrance which should be securely locked.



Absolute Security Is Assured by This Lock Incorporating Three Bolts.

This lock is made of bronze and it makes an ornamental trim when applied to a door of any color. When closed the door is secured by heavy ¾-inch bolts in three places, on the upper edge into a heavy nosing, at the lower edge into a brass plate and at the swinging edge into a heavy nosing. This makes it impossible to pry the door open.

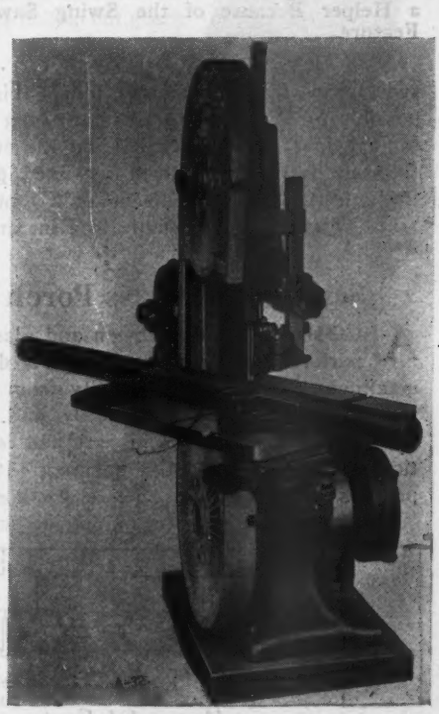
When so equipped the door is opened from the inside by a small push button and a one-eighth turn of the knob. After passing out it is only necessary to turn the knob back and the door is again completely locked. From the outside, the door is opened by means of a small cylinder key and a one-eighth turn of the knob. When closed and the knob turned back it is again completely locked. Locking and unlocking only require an instant.

✣

Swivel Guide Band Saw

A NEW model band saw for cutting wood, soft metals, steel and iron is now offered. This machine features a swiveling table and saw guides which permit directing the blade at any angle, making possible the cutting of long lengths of stock.

A roller guide is mounted on the table column immediately below the cutting point. The table and lower guide are integral and swivel together. An upper guide is mounted on the regular guide post and is capable of swiveling about the blade as a center. Thus the blade is supported immediately above and below the work and a perfectly straight cutting edge is always presented to the material regardless of the amount of twist given to the blade.



A Band Saw Which Has a Number of New and Improved Features to Facilitate the Work to Be Done.

This saw has a change of speed feature, making possible the cutting of an infinite variety of materials and shapes at the

proper speed and with the correct blade. Two improvements are pointed out in this machine. It can be used for straight cutting on ordinary work and also for cutting long lengths of stock such as boards, pipe and bar stock. The blade can be guided or adjusted minutely to compensate for faulty brazing or inaccuracy in filing and setting.

✣

Variety and Swing Saw

A COMBINATION variety and swing saw has been announced by one of the manufacturers which gives a combination of two machines in one. This machine carries a 26 by 30-inch table which tilts up to 45 degrees and is instantly locked at any desired setting. The table is fitted with a removable throat plate to allow for the use of a dado head, grooving saws, etc., and carries both cross-cut and ripping gauges, either of which can be used on either side of the saw.

With This Machine One Man Is Able to Cut Long Stock Without the Aid of a Helper Because of the Swing Saw Feature.

The type of motor is optional. A ½ H. P. motor, to operate from a lamp socket with 8-inch saws; a 1 H. P. power line motor, with 10-inch saws, or a 1½ H. P. power line motor, with 12-inch saws. A swing saw feature, incorporated in this machine, makes it possible for one man to cross cut long stock without need for a helper or table for holding the end. For such work the saw is unlocked from its fixed position and swung through the work by means of a foot treadle. The distance of swing is adjustable to a maximum of 8 inches.

✣

Screen and Glass Porch Enclosure

A COMBINATION screen and glass enclosure for sun parlors and sleeping porches is designed to give the maximum of comfort and utility from porches throughout all seasons. It can be quickly and easily opened and closed, either wholly or in part and is adaptable to practically any type of porch opening. It can be applied to porches already built as well as to those specially planned.

This enclosure consists of outside screens with inswinging glass windows. These windows are ordinarily made in three sections, though for narrow openings two sashes are sometimes necessary and for wide opening five sections may be used. The center section is stationary. The two side sections are so hinged that they may be swung open and folded back over the center section, leaving the entire opening clear.

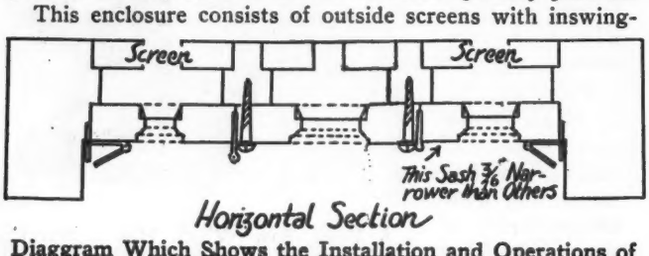


Diagram Which Shows the Installation and Operations of This Combination Screen and Glass Porch Enclosure.

The feature of these enclosures is in the method of hinging the side sashes to the center sash.

✣

Automatic Oil Supply Tank

AN automatic oil burner supply tank does away with the labor of hand pumping and the need for a bulky basement tank. It is operated by a small electric motor and is easily installed, requiring only three pipe connections, the suction, the feed line to the burner and the overflow to outside tank. Electric connection can be made to any convenient outlet.

When this tank is filled to approximately 50 gallons, the float control shuts off the motor and pump. The oil burner supply pipe is connected to the bottom of the tank and, as oil is consumed and the float control drops to the 45-gallon position, it automatically starts the motor and pump to refill the tank.

The complete unit consists of a 65-gallon, heavy, steel tank with interior metal float control which operates the switch of the motor. The motor operates a positive action piston pump which draws oil from the outside supply tank at the rate of 1 gallon per minute. If for any reason the oil supply in the outside tank is exhausted or the float control drops below 40 gallons, the float control rings an electric bell.

Pumping and Bulky Basement Tanks Are Done Away with by the Use of This Automatic Oil Supply Tank.

✣

Trucks with Four Wheel Brakes

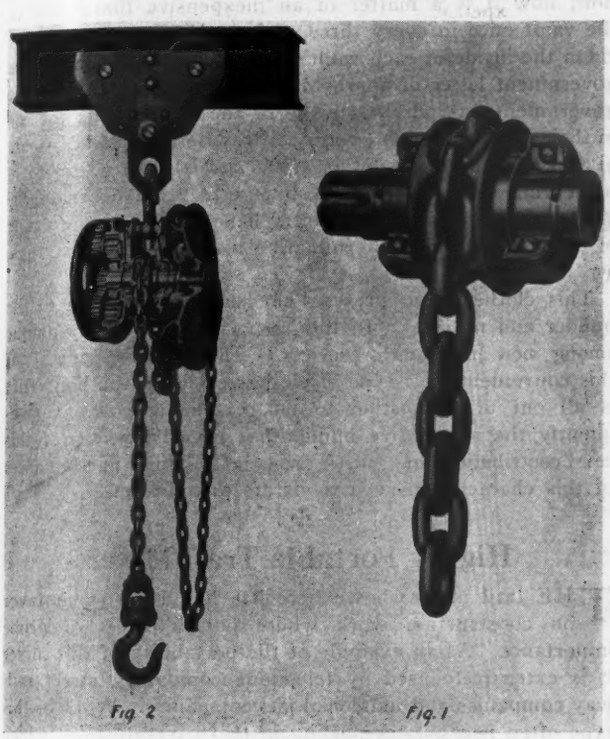
TWO new trucks have recently been added to a well known line. These trucks, of one ton and 1½ ton capacity, incorporate all the latest developments in the automotive industry. This includes mechanical four wheel brakes which are now, for the first time, applied to trucks. Another feature which is a departure from truck design of the past is the attention which has been given to the comfort of the truck operator. This has necessitated the rearrangement of the steering wheel, brake and clutch pedals in a way to afford ease of operation and position equal to any passenger car.

Controls, switches and fuses are concentrated within easy reach of the driver and all working parts have been made easily accessible so that adjustments can be made with the least possible work and loss of time. Mechanical improvements have added to the speed, horse power and rideability. The outward appearance is wholly redesigned with radiator, hood and chassis lines which denote grace, fleetness and power.

These models are designed to meet the swifter pace of modern business and the safety necessitated by ever increasing street traffic.

Ball Bearing Chain Block

THE latest development in chain blocks consists of the introduction of large size, chrome vanadium steel ball bearings to support the load sheave, as shown in Fig. 1. This block is just being put on the market and interesting



Sectional Views of the New Ball Bearing Chain Block Which Is Said to Have a Very High Mechanical Efficiency.

claims are made for its high mechanical efficiency. Fig. 2 shows a sectional view of the block and the location of the steel load sheaves carried on two ball bearings.

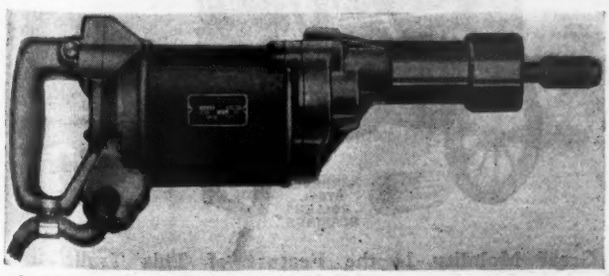
The ball bearings are arranged to take the entire weight of the load and to withstand the shock of all thrust and overload surges. The bearings are located in small chambers and provision is made, by means of steel and felt washers, to prevent the entrance of dust and grit.

These chain blocks incorporate another novel feature in the provision for continuous lubrication of the bearings, the driving pinion, shaft and driving gears. They contain all the well-known structural features such as electrically welded chain, drop-forged, detachable shackles and steel safety hooks. They are being marketed in all capacities from ¼ to 20 tons.

✣

Friction Head Screw Driver

UNLIKE other electric screw drivers heretofore offered, a new product in this field is designed with a disc type friction clutch, which is automatically adjusted according to the pressure applied by the operator. Each tool is supplied with a ten-foot, all-rubber, connecting cable and plug and is designed for operation on either direct or alternating current.

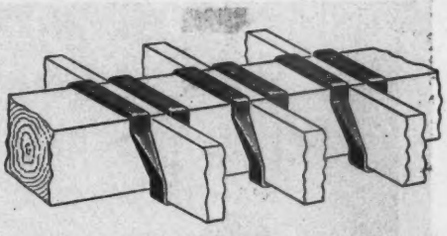


A Disc Type Friction Clutch, Adjusted According to the Pressure Applied by the Operator, Features This Screw Driver.

✣

Steel Joist and Timber Hanger

IN these days of expensive construction labor, one should take advantage of the many little opportunities offered which not only minimize the cost of building, but at the same time produce the best results obtainable.



Reduced Construction Costs Are Credited to These Joist and Timber Hangers as Well as Increased Strength.

So frequently floor timbers are merely spiked fast to the sills, which lessens the factor of safety at this point. Where mortise and tenon are employed, the strength is reduced by the amount of lumber cut away, and furthermore considerable time is required, marking out and sawing the lumber.

The question often arises, "How will the beams be held where they abut their supports—will they be cut away by framing, or shall we depend merely on spiking?" It is of utmost importance to have the floor timbers well secured—the stability of the building depends upon it.

The steel joist and timber hangers shown in the illustrations are cheaper and better than mortise and tenon.

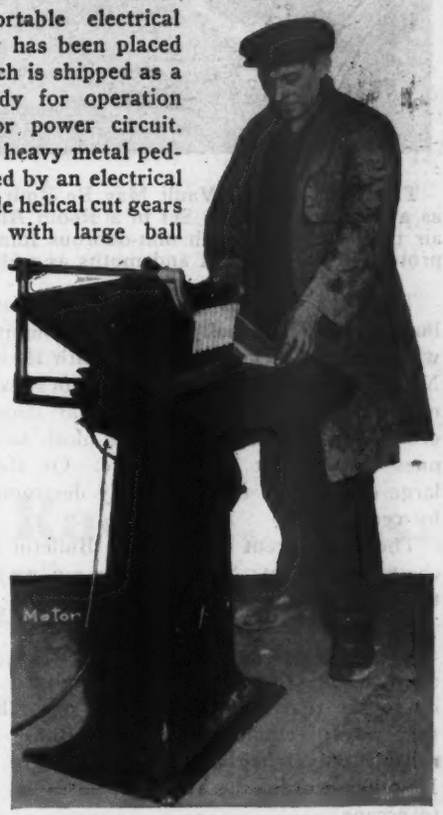
✣

Portable Universal Saw

ANOTHER portable electrical universal saw has been placed on the market which is shipped as a complete unit ready for operation from a lighting or power circuit. It is mounted on a heavy metal pedestal and is operated by an electrical motor through wide helical cut gears operating in oil, with large ball bearings. The power unit operates up and down by means of a large hand wheel adjustment.

The table is 23 by 28 inches, large enough to handle 12-inch wide stock, and is 34 inches high. Saw diameter is 8 inches and the depth of cut 2⅜ inches. A removable 1-inch dado plate is provided. The motor is of the ½ horsepower type.

This saw, which is said to be one of the most powerful portable saws manufactured, is suitable for hauling wood, metal, bakelite and other compositions.



Shipped Ready for Connection to a Light or Power Circuit. This is a powerful, portable saw.

Science and the Clothes Closet

COMMON sense tells us that the clothes closet can no more be neglected than can bath rooms or kitchens. In comparison to its function, the clothes closet has been given scant attention. Science has pointed the way to better fixtures, better lighting, better heating. Why not invoke its aid in the protection and safe storage of valuable furs and clothing?

This Steel Clothes Vault May Be Built Into the Wall or, as a Separate Cabinet, Set in a Room Already Built. It is air tight and, used with non-odorous fumigant, is a perfect protection against dust and moths as well as fire and theft.

The chief enemies of clothing are moths, dust, fire and burglary. Ineffectually, we have fought moths and dust with the cedar chest and later with the cedar-lined closet. Now science tells us that we can't expect complete or even adequate protection by cedar odor alone. In fact, cedar will kill only the young moth larvae or grubs, the ones that do but little damage. On the other hand, the large ones, those that are really destructive, are unharmed by cedar.

The most recent Government Bulletin No. 1051 on cedar chests states that: "Cedar chests can not be depended upon to kill half to full grown larvae."

Now it is characteristic of at least some scientists to state what you can't do and let it go at that. But not so with Government bulletin mentioned above which goes on to say that fumigation is the one reliable and satisfactory way of eliminating moths. But it is convenient and reliable only when used in an air-tight clothes container. In other words, the fumigant loses its power if allowed to escape.

Constructed of a special building material, the clothes vault fills this need for an effective fumigation chamber for moths and also for bacteria or germ life. Not only that, but the vault being air-tight is also dust-proof and damp-proof.

No longer need the housewife go through the laborious process of sunning, brushing and beating her clothing, then putting them away in evil-smelling chests or bags, whose only merit is their cheapness. This process is something the housewife can rely on, absolutely. Eternal vigilance was heretofore the price one had to pay for moth protection; now it is a matter of an inexpensive fumigation in the vault once in every three or four months.

On the inside of each vault's door is posted a copy of the government letter of approval on the process. In fact, the government has purchased one of the large vaults for use in their Washington laboratory. Likewise the Field Museum of Chicago has requisitioned eight special vaults for use in preserving their valuable specimens. Over a dozen of the larger warehouses of the country have installed large vaults of this character for exterminating moths in furniture, rugs, etc.

This clothes vault presents no servicing problem to the builder and no grief. In this respect it is probably unique among new mechanical devices. The immense appeal of this convenient, new type of clothes closet to the housewife is all out of proportion to its reasonable cost. Consequently the speculative builder has eagerly welcomed this new contribution of science and is building in containers of this character in even moderate priced homes.

✣

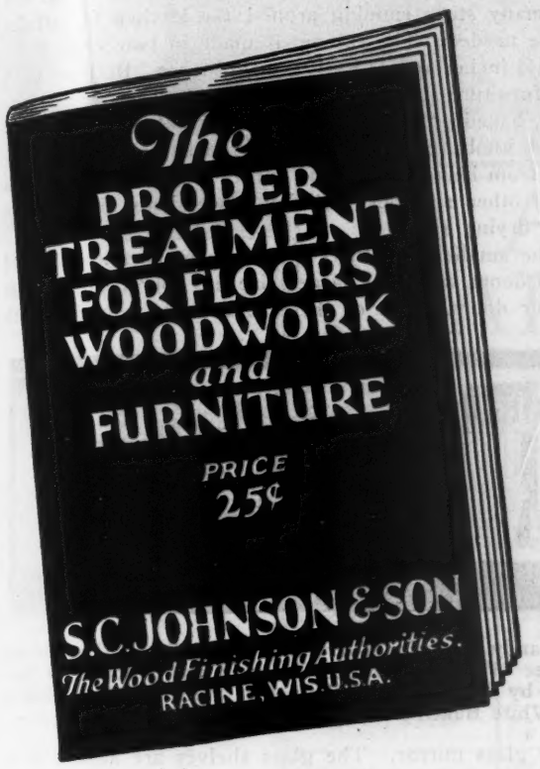
Highly Portable Trail Mixer

THE trail mixer shown here has found particular favor on construction work where portability is of prime importance. As an example of the portability of this mixer it is extensively used by telephone companies, street railway companies and municipal gas companies. Work of this type often necessitates putting in two concrete jobs, which are twenty miles apart, on the same day. Such jobs are handled by this mixer every day in the year all over the country.

Steel trucks and compact construction make possible this great extreme mobility. The two wheel truck has solid rubber tires and roller bearing wheels which, with the wish-bone lift hitch, give a ten-inch road clearance and make it possible to attach the mixer to any truck and tow it at any speed without whipping. All steel construction has reduced the weight more than 1,000 pounds while maintaining ample capacity and durability. This mixer is equipped with either power loader or low charger.

Great Mobility Is the Feature of This Trail Mixer. Because of its design and light, strong, all-steel construction it will ride behind a truck or car at twenty miles an hour without injury or whipping.

The PROPER Treatment of Woodwork and Floors



Did you ever stop to think that the sale or rental of that house, apartment, or office is going to depend a good 50% on interior decoration?

It may not be fair, but your prospect's first impression of floors, walls and woodwork just about decides then and there whether He (and especially She) is going to even listen to your talk about other advantages.

Whether your painting contract is sublet or not you ought to know for instance—

How to make inexpensive soft woods as beautiful as hard-wood.

How to get that artistic flat effect without rubbing.

How to have pleasing yet sanitary washable walls.

How to have those exquisite mellow, yet easily cleaned floors.

How many coats—how long they take to dry—how much a gallon ought to cover—and above all what to use.

This JOHNSON book on Wood Finishing will tell you. It is the concentrated result of forty years of practical experience, plus the finest laboratory and manufacturing facilities. It will interest every man connected with the building game whether he ever touches a paint brush or not. Tear off that coupon now before you forget it.

JOHNSON materials will give *all* your work a square deal. They bring out the best there is in the parts they directly cover and they will *sell* the whole job.

S. C. JOHNSON & SON, Racine, Wis.

"The Wood Finishing Authorities"

VARNISHES ENAMELS WOOD DYES WAXES FILLERS WALL FINISHES

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Please send me, without charge and postpaid, that JOHNSON Book on Wood Finishing.

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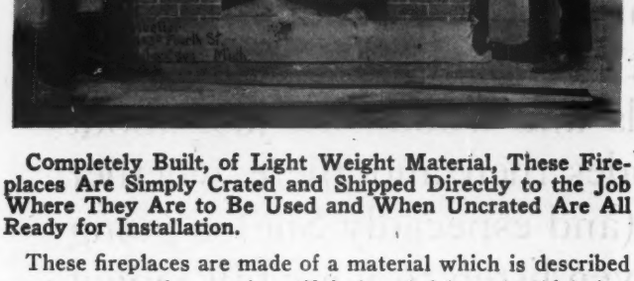
(This coupon also good at any JOHNSON branch or Service Department)

Ready Built Fireplaces

READY built fireplaces are an innovation which should be especially valuable in the construction of apartments and of houses in localities where the services of expert brick masons are not readily available. They greatly simplify work anywhere, for the laying of decorative brick work requires time and special skill.

Completely Built, of Light Weight Material, These Fireplaces Are Simply Crated and Shipped Directly to the Job Where They Are to Be Used and When Uncrated Are All Ready for Installation.

These fireplaces are made of a material which is described as stronger and more beautiful than brick and which has the surface appearance of a brick fireplace. It is light in weight so that shipping charges are not excessive and the price is low. Each fireplace is built complete in the factory, crated and shipped direct to the job, ready to install. Installation requires about one hour and can be done after the finished floors are laid.



The Skilled Labor of Construction Is All Done in the Factory and no Special Skill Is Required for Setting up the Fireplace. The ordinary workmen can install the fireplace in about an hour's time.

Because these fireplaces are built by specialists in their line of work, they are all beautifully designed and correct in every mechanical feature. They can be used for gas or electric grates, or, with a flue, for coal or wood grates. The manufacturers also supply grates, brass or copper fronts and heating coils, if desired.

✣

Now the Kitchen Wall Cabinet

THE development of the kitchen cabinet and a number of other modern conveniences has done much to take the labor out of housekeeping and keep the kitchen neat and the kitchen appliances in good condition. But none of this equipment has ever provided the proper sort of a place for drying and keeping towels, soaps, cleaning powders, brushes, knives and such small utensils where they will be handy and well cared for.

Now comes the kitchen wall cabinet, made in both wall and recess styles, which provides for all these things and saves many steps running around the kitchen for articles that are needed. The cabinet is made in two sizes, 51 by 19 by 5½ inches and 34 by 19 by 5½ inches. Both are of 18 gauge furniture steel finished with the highest grade white enamel, baked on. Fittings are nickel plated, shelves, mirror and knobs of plate glass, a bracket of wood keeps knives from being dulled, and spring clips care for brushes and all other sundries. Sliding towel bars provide nine feet of drying space.

In the smaller size there are four compartments served by two doors while the larger size has four compartments and four doors. One of these four doors is backed with

A Handy Place for Every One of the Small Utensils and Supplies Which Are Used Daily in the Kitchen Is Furnished by This Steel Wall Cabinet Which Is Furnished in Fine White Baked Enamel.

a plate glass mirror. The glass shelves are adjustable so that supplies of all sizes may be accommodated conveniently.

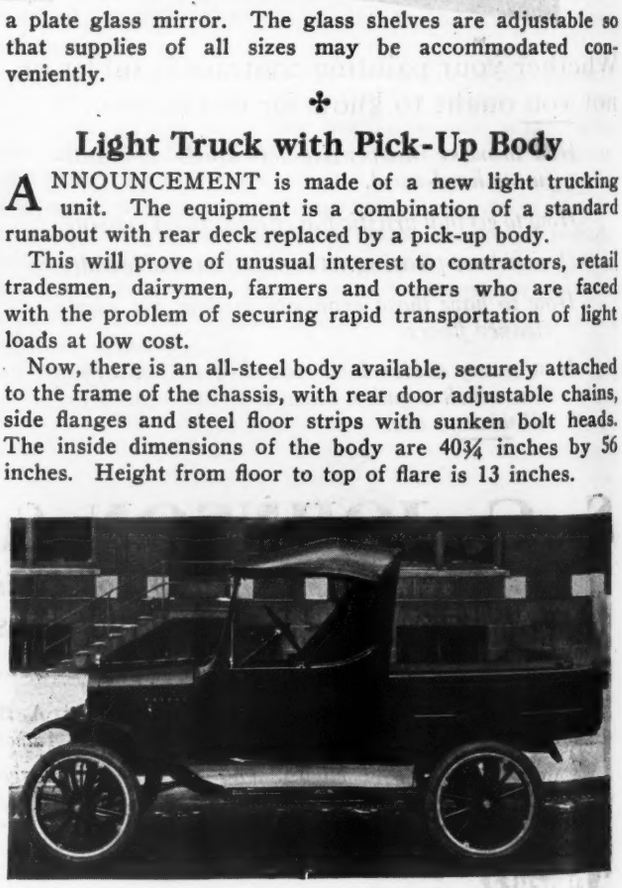
✣

Light Truck with Pick-Up Body

ANNOUNCEMENT is made of a new light trucking unit. The equipment is a combination of a standard runabout with rear deck replaced by a pick-up body.

This will prove of unusual interest to contractors, retail tradesmen, dairymen, farmers and others who are faced with the problem of securing rapid transportation of light loads at low cost.

Now, there is an all-steel body available, securely attached to the frame of the chassis, with rear door adjustable chains, side flanges and steel floor strips with sunken bolt heads. The inside dimensions of the body are 40¾ inches by 56 inches. Height from floor to top of flare is 13 inches.



For Rapid Transportation at Low Cost This Pick-Up Body, Replacing the Rear Deck on a Standard Runabout Chassis, Should Prove a Great Convenience to the Contractor.

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CONCRETE WALLS....	S-W Concrete Wall Finish	Old Dutch Enamel, Gloss		
CEMENT FLOORS.....	S-W Concrete Floor Paint	S-W Concrete Floor Paint		
EXTERIOR WOOD SURFACES.....	SWP (Sherwin-Williams Prepared Paint)	Old Dutch Enamel, Gloss	S-W Preservative Shingle Stain S-W Acid or Oil Stain	Rexpar Varnish
EXTERIOR METAL SURFACES.....	Kromik Structural Steel Primer Metalastic (for finishing coats)	Old Dutch Enamel, Gloss		
FACTORY WALLS (Interior)	S-W Eg-Shel Mill White S-W Fume Resisting White	Old Dutch Enamel or Enameloid		
FLOORS (Interior Wood)..	S-W Inside Floor Paint (the enamel-like finish)	S-W Inside Floor Paint (the enamel-like finish)	Oil Stain or Floorlac Varnish Stain	Mar-Not Floor Varnish
GALVANIZED IRON SURFACES.....	S-W Galvanized Iron Primer (Finish with any Paint)	S-W Galvanized Iron Primer and Old Dutch Enamel		
INTERIOR WALLS AND CEILINGS	Flat-Tone Wall Finish S-W Eg-Shel Mill White	Old Dutch Enamel or Enameloid		
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PORCH FLOORS AND DECKS.....	S-W Porch and Deck Paint			
RADIATORS AND PIPES.....	Flat-Tone Wall Finish or S-W Gold Paint S-W Aluminum Paint	For White—S-W Snow White Enamel For colors—Enameloid		
ROOFS—Metal.....	SWP or Metalastic (if Galvanized, prime with S-W Galvanized Iron Primer)			
ROOFS—Wood Shingle...	SWP		S-W Preservative Shingle Stain	
STACKS AND HOT SURFACES.....	Salamander Smoke-Stack Black			
STRUCTURAL STEEL..	Kromik Structural Steel Primer Metalastic (for finishing coats)			
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Built-In Unit System

GENERAL convenience, as well as the space economy demanded for the modern small apartment and small house, has brought built-in furniture and fixtures into prominence in the last few years and the development of this type of equipment has been truly remarkable. Fixtures of the built-in kind are being manufactured by one concern on a unit basis so that different units may be put together in whatever combination is desired for the particular purpose to be served.

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These units are shipped ready to install and may be finished in any style to match the woodwork or furniture. Most of the units may be installed either as wall units or as recess units, designed to fit between the studding. They cover, in a practical manner, every need of the kitchen, bath room and breakfast nook as well as such special purposes as telephone cabinets and folding wall seats.

The installation shown here is a combination of several of the kitchen units. At the left is a broom closet, at the right a cupboard unit and in the center a unit combining cupboard and folding table which is frequently used for the breakfast nook. In the other wall, under the window at the right, is a folding seat large enough for two people. It is shown closed but is available by opening the door. Another single seat might be installed at the end of the sink, accommodating three people at the table. This combination is only a suggestion of the infinite variety that is available including a standard kitchen cabinet.

✣

New Wall Surface Material

PRODUCTION has been started on a new material for covering the exterior and interior surfaces of walls. It is a plastic combination of cements that, when applied, is practically impervious to water and may be employed in situations where other plasters are not efficient, for dampness does not cause it to scale or disintegrate.

When applied on metal lath to either the interior or the exterior of buildings, it forms a reinforced concrete covering which adds rigidity and which effects a saving of fuel by retaining the heat within the buildings. When applied to the interior walls, the surface is so hard that it is not easily scarred, which makes it particularly well adapted for use in schools and public buildings subjected to hard usage. When employed either in stucco or interior plaster it lends itself to any kind of finish desired.

When mixed on the job with the specified amount of sand and water it is ready to apply. It may be applied to wood lath, metal lath, brick, tile, or concrete. For interior work it may be sand finished, white coated, troweled smooth for papering, or given a natural finish. On exterior work it can be applied in the same manner as portland cement stucco. Its natural color is a light tan, pleasing to the eye and harmonizing well with light colored trim.

This product in storage is not affected by age. It will not lose strength or become hard.

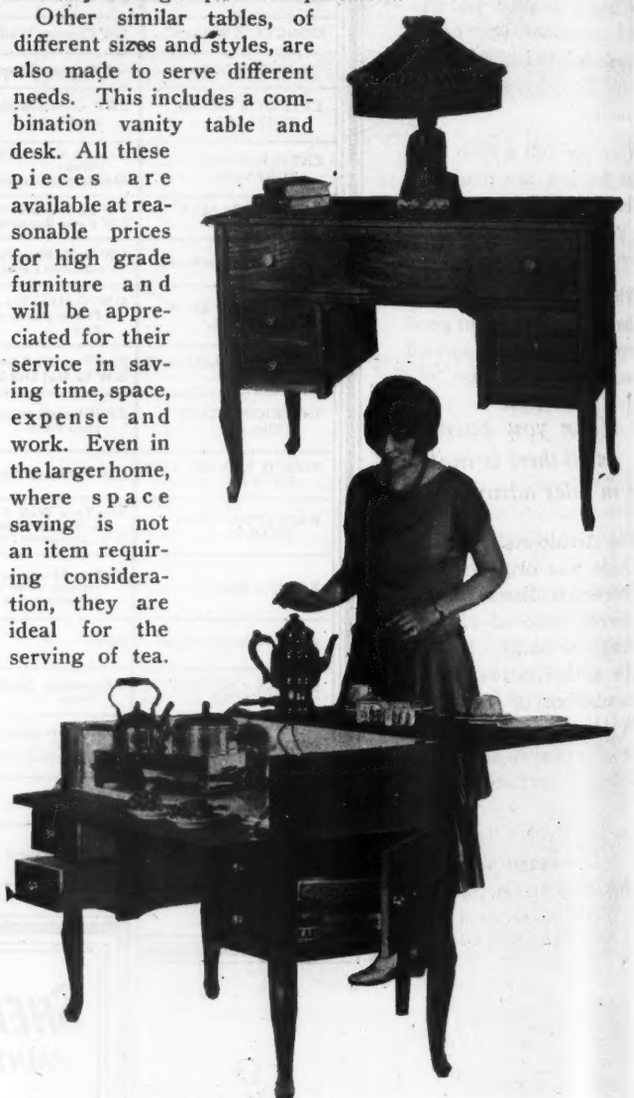
✣

Library Table—Kitchenette

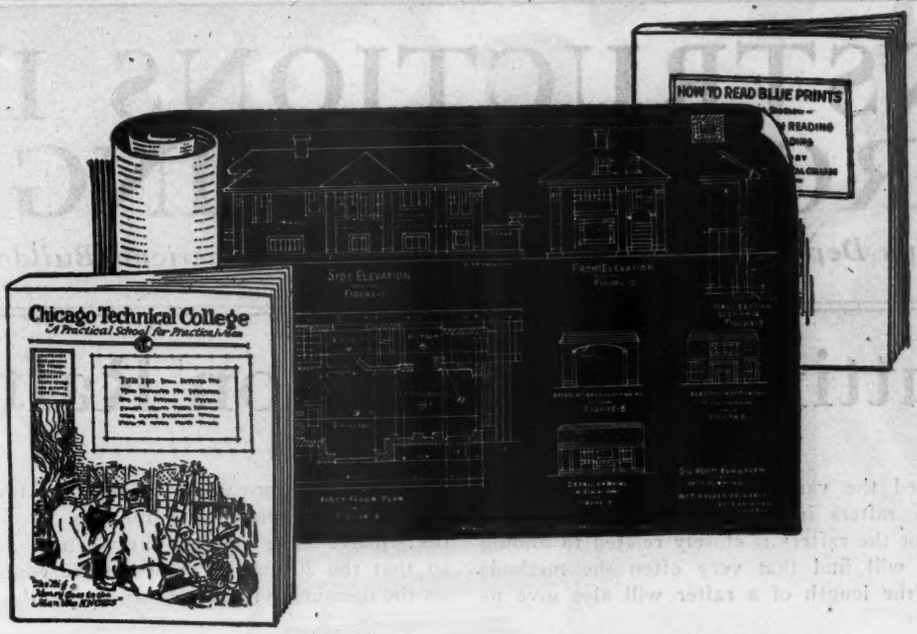
COMBINATION furniture pieces having more than one use, go far toward the conservation of space, especially in the small modern apartment. One of these is the library table-kitchenette. It is a fine piece of furniture, in either mahogany or walnut and Queen Anne style. As a library table it is an appropriate piece for any setting where it may be used but it may be opened up to serve its kitchenette function in a most practical manner.

The front drops forming an ample table for two persons and the top raises to protect the wall from grease or may be dropped back to form an additional table for four people. Inside is a double electrical outlet so that two cooking appliances may be used at one time. At one side drawers are provided for linen and silver while at the other side is a handy storage space compartment.

Other similar tables, of different sizes and styles, are also made to serve different needs. This includes a combination vanity table and desk. All these pieces are available at reasonable prices for high grade furniture and will be appreciated for their service in saving time, space, expense and work. Even in the larger home, where space saving is not an item requiring consideration, they are ideal for the serving of tea.



Double Purpose Furniture Which Is Beautiful, Substantial and Practical. This combination of library table is a great convenience for serving tea in any home as well as a real space-saver for the small apartment or studio.



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INSTRUCTIONS IN ROOF FRAMING

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Cutting the Common Rafter

By JOHN T. NEUFELD

WE discussed the various methods of finding the lengths of rafters in our last lesson. Obtaining the cuts for the rafters is closely related to finding the lengths. We will find that very often the methods employed to find the length of a rafter will also give us the cut.

The cut at the upper end of the rafter is referred to as the TOP CUT, PLUMB CUT, VERTICAL CUT or RIDGE CUT. The cut at the lower end may be referred to as the SEAT CUT, HORIZONTAL CUT or BOTTOM CUT. The bottom cut sometimes requires both a horizontal and also a vertical cut as shown in Fig. 15. This is called a bird's-mouth.

If we carefully examine the top cut and the seat cut we find that the top cut of the rafter coincides with a line straight down or vertical and that the bottom cut coincides with a horizontal line, also that the two lines form a right angle where they meet. We, therefore, learn one thing, "The top and seat cut of the common rafter are always at right angles to each other." This makes it convenient to use the square.

If we assume a huge square placed alongside of the rafter as shown in Fig. 11, we see that the edge of the tongue coincides with the top cut of the rafter, and the edge of the blade coincides with the bottom cut. If the square were marked in feet it would show the total run of the rafter on the blade and the total rise of the rafter on the tongue.

This gives us one method of laying out the cuts for the common rafter. In place of the feet on this large square we use inches on the regular square. To lay out the cut for the rafter shown we would take the No. 20 on the blade of the square, and the No. 10 on the tongue of the square. The square must then be laid on the board so that the 20 and 10 come on the edge of the board or on the measuring line as shown in the illustrations.

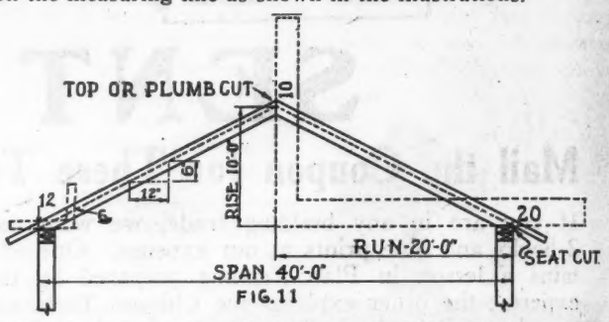


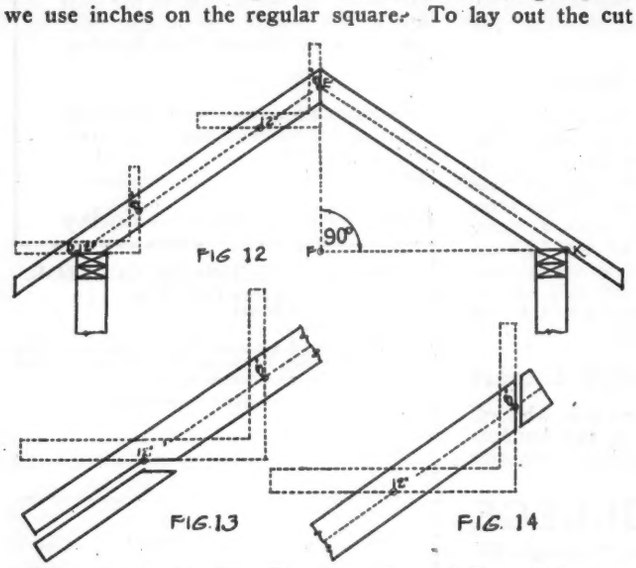
Fig. 11—Imagine a Huge Square Placed Along the Side of a Rafter to See How the Top and Bottom Cuts Are Obtained.

The question has been repeatedly asked, why use the measuring line and not the back or upper edge of the rafter? We may use either one, if we understand how to measure. By observing or studying the several illustrations given herewith we see that the edge of the plate, from which we generally calculate, is not on the upper edge of the rafter in most cases. Therefore, the length of the rafter obtained when figuring by the different methods is not along the edge of the rafter but along a line which passes through the point on the edge of the plate. In studying roof framing it is, therefore, best to make this point clear, so that errors as shown in Fig. 18 may not happen. A beginner is apt to make this error if he does not understand this point clearly.

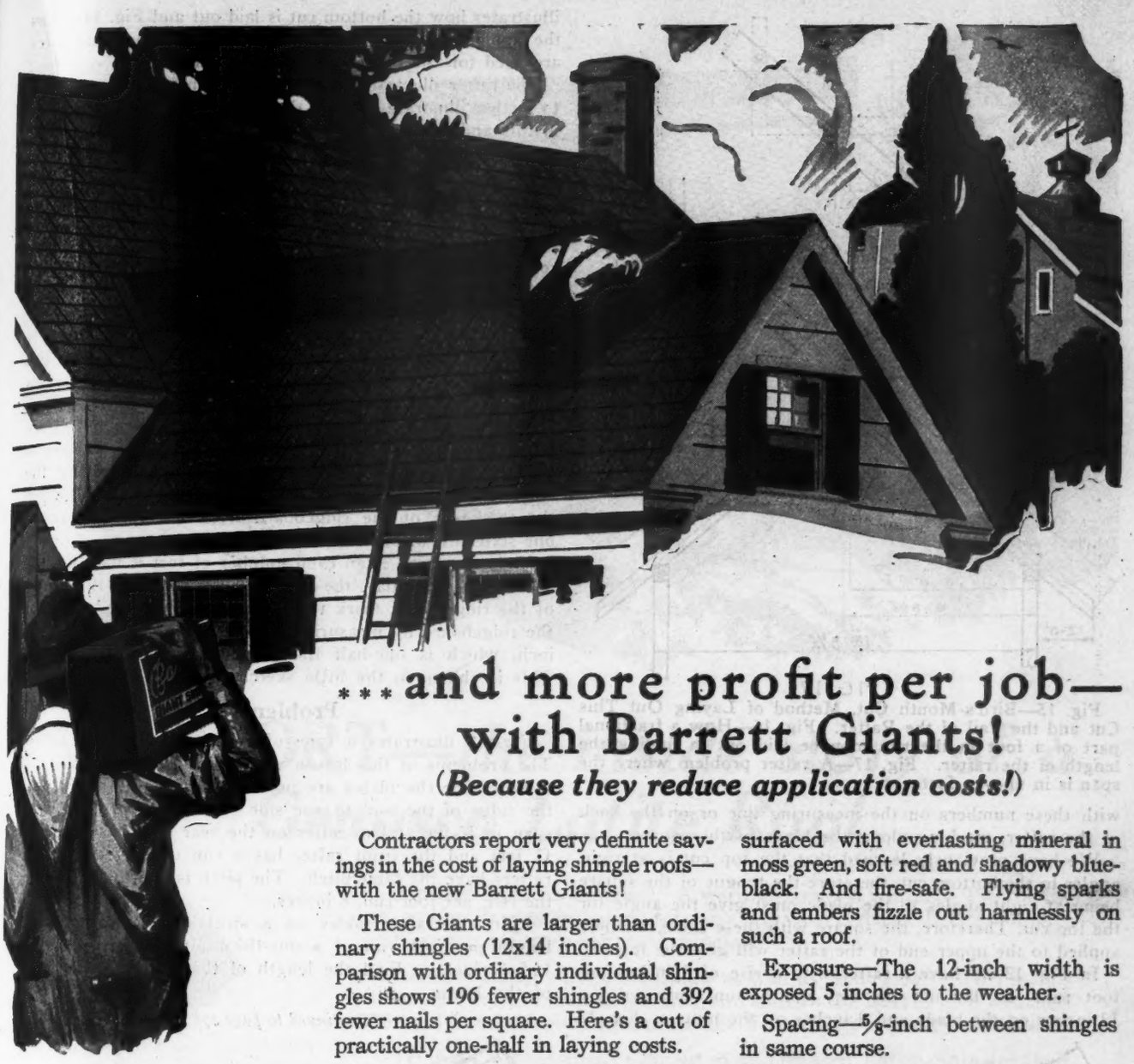
We have now learned one method of laying out the top and bottom cut for the common rafter. Expressing this in a rule, we may say, to lay out the top and bottom cuts for the common rafter take the numbers representing the total run of the rafter in feet on the blade of the square and the number representing the total rise in feet on the tongue of the square. For the bottom cut mark along the blade and for the top cut mark along the tongue.

The larger arm of the square is called the blade or body of the square and the smaller arm is called the tongue.

We will next study the little square on the left-hand side of Fig. 11 and Fig. 12. Here the square is placed so that 1 foot or 12 inches on the blade coincides with the edge of the plate. The blade of the square then covers 1 foot of run of the rafter and the tongue, of course, must show the rise of the rafter for 1 foot. As the edge of the blade now coincides with the bottom or horizontal cut of the rafter it gives us another method of obtaining this cut, that is, take 12 inches on the blade and the rise per foot run on the tongue and lay the square on the board



Figs. 12, 13, 14—The Rise Per Foot of Run, Taken on the Tongue, and 12 Inches on the Blade, Give the Top and Bottom Cuts for the Common Rafter.



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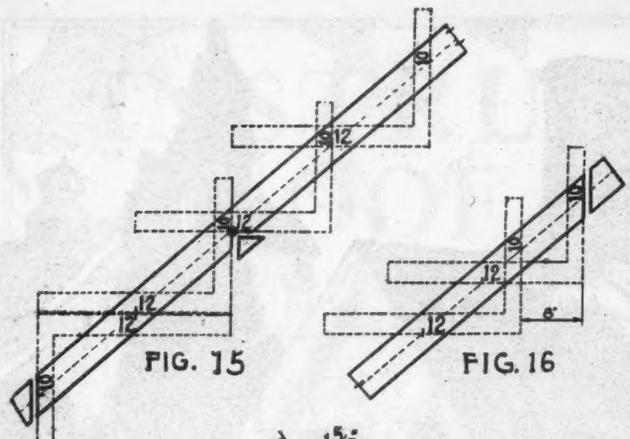


FIG. 15 FIG. 16

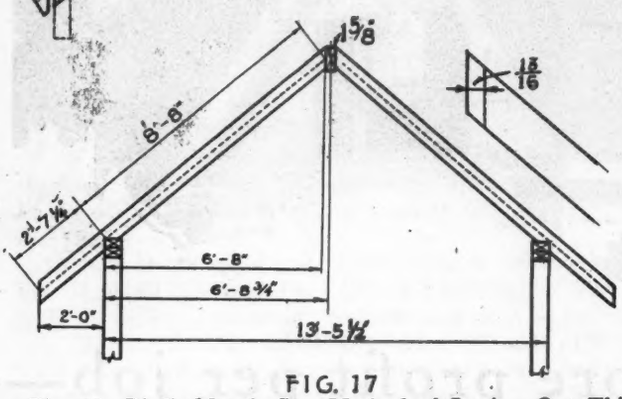


FIG. 17

Fig. 15—Bird's-Mouth Cut, Method of Laying Out This Cut and the Tail of the Rafter. Fig. 16—How a fractional part of a foot in the run may be laid out in finding the length of the rafter. Fig. 17—A rafter problem where the span is in uneven feet.

with these numbers on the measuring line or on the back of the rafter, marking along the blade of the square.

We have previously learned that the top cut is at right angles to the bottom cut, therefore the tongue of the square being at right angles to the blade must give the angle for the top cut. Therefore, the square with these same numbers applied to the upper end of the rafter will give the top cut.

In Fig. 12 we have a rafter with a rise of 8 inches per foot run. To lay out the top and bottom cuts we use 12 inches on the blade and 8 inches on the tongue. Fig. 13 illustrates how the bottom cut is laid out and Fig. 14 shows the application for the top cut. Note the same numbers are used for the top and the bottom cut.

The rafter illustrated in Fig. 17 presents a good problem to further illustrate some of the things that we have learned in this and the preceding lessons.

This rafter is drawn to have a 10-inch rise per foot run. For every foot of run we have 2 feet of span—that is, the span is twice the run. The proportion of the rise to the span, therefore, is 10 inches to 24 inches, or 2 feet. The pitch is rise ÷ span = 10/24 = 5/12. A 5/12 pitch corresponds to a 10-inch rise per foot run.

As the rise is 10 inches per foot run we use 12 and 10 on the square to obtain the cuts. Fig. 15 shows how the bird's-mouth cut at the seat is laid out. The overhang is 2 feet wide; therefore, the square is applied twice to get the length of this overhang. This figure also illustrates how the square is applied to get the length of the rafter. Beginning at the seat cut the square must be applied six times for the 6 feet of run. This leaves a fraction of a foot (8 inches). This is taken care of by applying the square as shown in Fig. 16. In this case we have subtracted the thickness of the ridgeboard from the run (dropping one-sixteenth of an inch).

If the total run is an even number of feet it may be just as simple to calculate the length of the rafter to the center of the ridgeboard, mark the top cut, and then subtract for the ridgeboard by measuring back thirteen-sixteenths of an inch, which is one-half the thickness of the ridgeboard. This is shown in the little sketch in Fig. 17.

Problems

Fig. 19 illustrates a type of roof very common today. The problems of this lesson will be based on this roof.

Note that the plates are not at even height. This puts the ridge of the roof to one side of the center. The total span is 27 feet. The rafter on the rear side has a run of 11 feet and the front rafter has a run of 16 feet. These rafters have the same pitch. The pitch is one-third, making the rise, per foot run, 8 inches.

1. In the rafter tables on a steel square we find the length per foot run of a one-third pitch rafter gives us 14 5/12 inches. Find the length of the rafter for the rear of the house.

(*Continued to page 278.*)

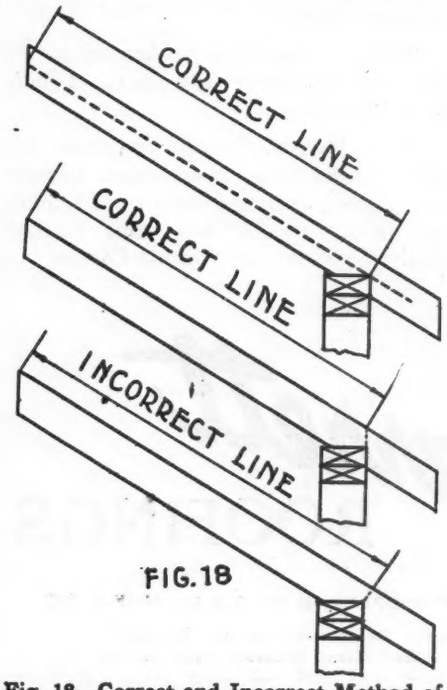


FIG. 18

Fig. 18—Correct and Incorrect Method of Laying Out the Length of a Rafter.

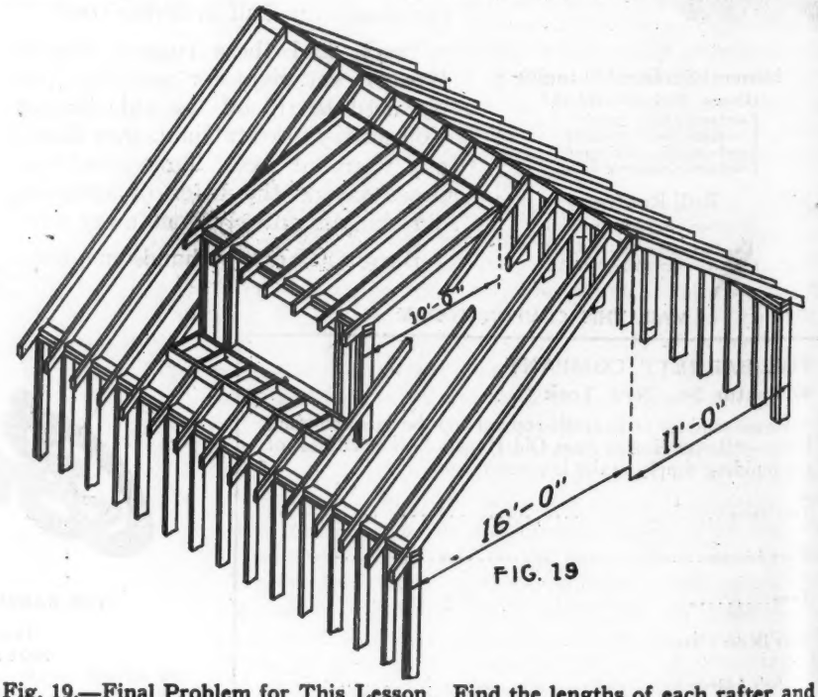
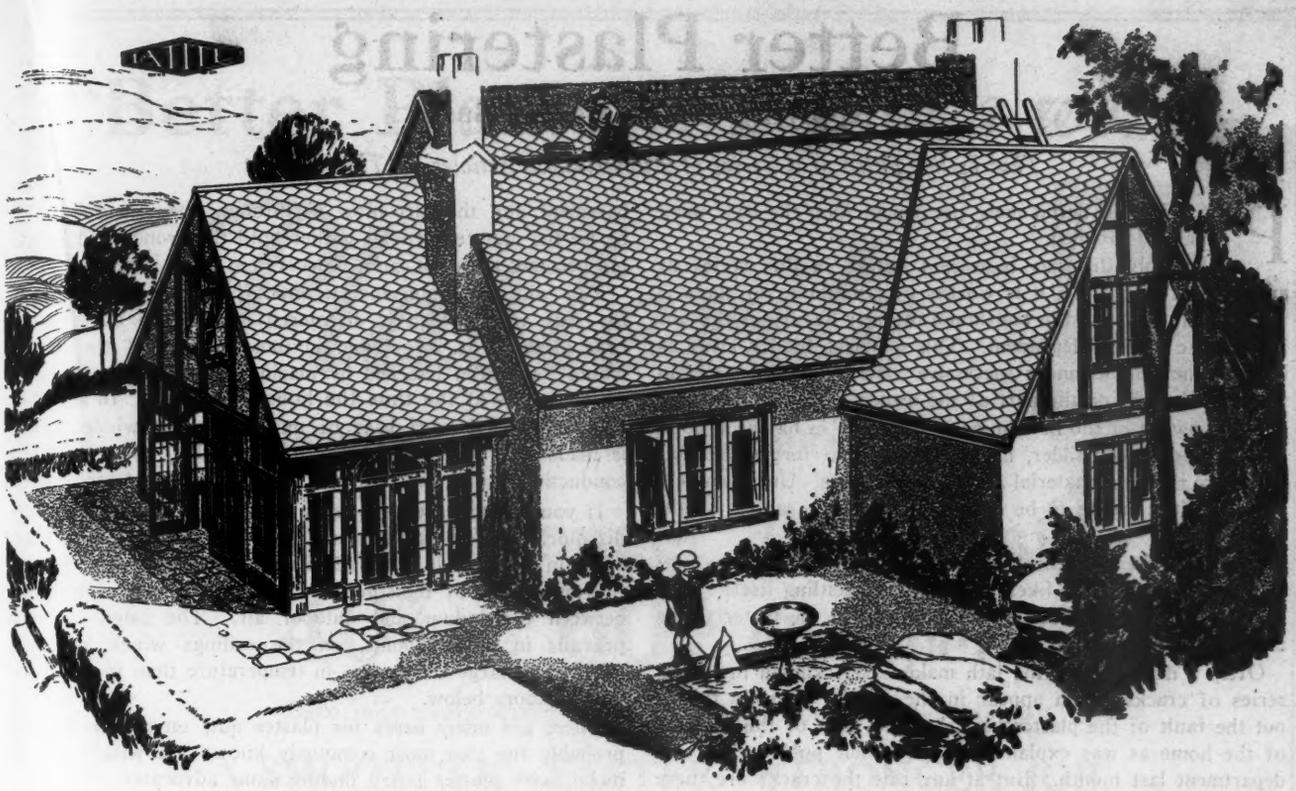
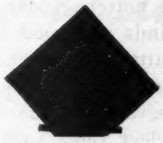


FIG. 19

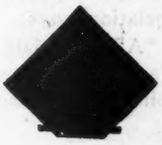
Fig. 19.—Final Problem for This Lesson. Find the lengths of each rafter and give the numbers on the square which give the cuts.



COMFORT—*the inside story of a Genasco Latite Roof*



Front and back views of a Genasco Latite Shingle showing the "key" that locks each shingle to those underneath. **This "key" is invisible on the completed roof.** Genasco Latite Shingles are surfaced with non-fading red, green and blue-black granulated slate.



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PLASTER can be no more permanent than the base upon which it is applied.

Possibly this has been said before in this series of articles, but even if so, it is worthy of repetition, for there is nothing upon which the continued interior beauty of the finished home is more dependent. This material, hidden away as it is in a new home, under successive coats of plaster comes in for little thought on the part of the owner.

If the owner of the new home is fortunate in having a good and conscientious builder, he will be able to forget the fact that there is such a material as lath in his home. Unfortunately this too often proves to be one of those things, which "might have been."

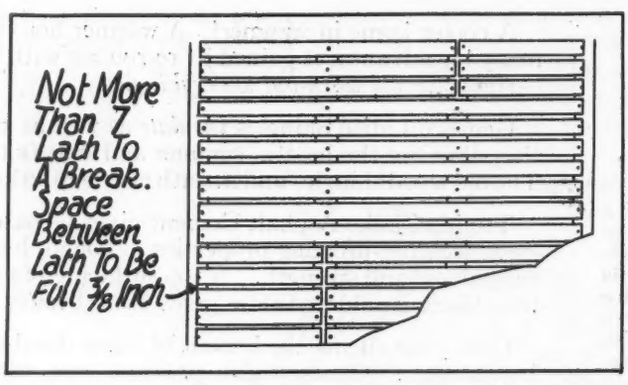
For about the time the family gets nicely settled in the new home the new home is likely to do a little settling itself. And it is then that the caliber of the builder and the materials he used come in for a test.

Often a deficiency in the lath makes itself known first by a series of cracks which appear in the walls. Possibly this is not the fault of the plaster base, but the fault of the framing of the home as was explained in the article published in this department last month. But at any rate the cracks are there and must be patched.

Unfortunately this patching of plaster is only part of the problem and expense involved. Whatever decorations have been chosen for the walls must be done over again, and even so there is no definite assurance that more cracks will not appear after the patching and redecorating are completed.

Another condition which is all too common is the appearance of "lath shadows" upon the ceilings and walls of rooms. In these cases, which all of us have seen, the lath seems to take substance and show through the plaster and whatever decorations there may be, like the ribs show through the hide of a starved, flea-bitten horse.

These lath shadows, so often blamed on the dust settling through the plaster, because they usually appear more pronounced in the ceiling of the room, are really caused by dust which has been caught in the condensation of moisture in the more poorly insulated portions of the wall or ceiling.



It Is Most Important That Wood Lath Be Carefully Selected and Properly Applied. If this is done much unsatisfactory plaster work can be avoided.

Look carefully at the next case of this kind which you see. You will notice that the darker portions are directly opposite the joints between the lath, while the wider portions over the lath are more nearly original color of the finish.

Dust gathers most where there is the greatest difference between the temperature of the room and the temperature of the space above the room. This is in the space where the plaster keys through the wood lath, affording a ready avenue for the conduction of heat. The wood lath is relatively a poorer conductor than the plaster, so under the space backed by the lath the condensation is less.

Consequently when the moisture in the air is condensed in tiny, dust catching globules, it is concentrated on the strips opposite the space between the lath. Here is collected the dust from sweeping, the soot and coal dust and ashes from the basement and the dirt blow in through open windows. Bit by bit the minute particles gather until the pronounced streaking becomes apparent, until redecoration again is necessary.

You will find upon investigation that even on wood lath the only work which is discolored is likely to be only two coat plaster. It is possible in most cases that the trouble would have been lessened by placing another coat of plaster on the walls at the time the house was built. In a ceiling or wall erected on a base of metal lath, the whole surface is made into what is virtually a single slab, with equal heat conductivity in all directions and this trouble is not encountered.

If you are still skeptical as to this being the cause of plaster discolorations, investigate and find the trouble comes most often in the outside walls of kitchens and bathrooms, because the prevalence of moisture and large temperature difference between the indoor and outdoor air. The same condition prevails in upper rooms, on the ceilings which are more exposed to large differences in temperature than in the rooms on the floors below.

There are many bases for plaster now on the market, but probably the two most commonly known are wood lath and metal, with plaster board finding some advocates. The wood lath has been with American builders for many years, but hardly in its present form. There was a time when only the best of white pine was used for lath, hand split and free from defects. This is no longer true, and the person who uses this material should be exceedingly careful to see that the lath are of the proper quality.

The fact is that some of the poorer quality of lumber now used, by force of circumstances on account of the scarcity of better grades, for certain kinds of wood lath contain natural acids which are injurious to plaster and great care should be exercised to select only such lath as is free from destructive elements. The manner in which the lath are applied and the size of nails used are not the least important.

Concerning this material, the specifications recommended by the Contracting Plasterers' International Association says:

"All wood lath to be No. 1 grade lath, 1½ inches wide. Nails to be 3 penny fine, 6 gauge wire nails." And the following additional supplementary suggestions are offered:

"In the Southwestern states yellow pine lath are to be used; in the Pacific Coast region pine and fir lath are used; in the eastern states pine and cypress lath are used. In the Central West mixed lath composed of hard pine and hemlock are used."

This same authority states as to the manner in which the wood lath is to be applied:

"All wood lath shall be nailed to each stud, joist or bearing, with joints broken, not over seven lath to a break, no vertical or diagonal lathing allowed, a full ⅜-inch key to be left for lime and mortar and not less than ¼ inch for hard plaster."

The jerry builder will slap his lath on so as to leave prac-

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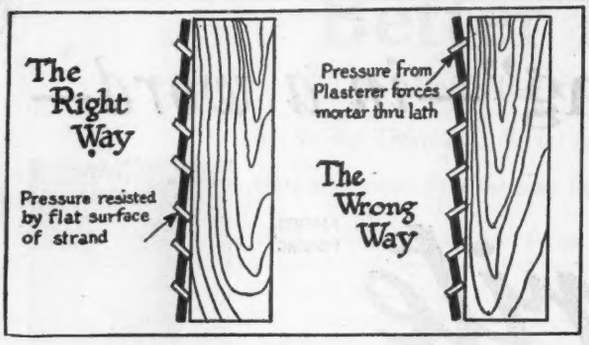
PLASTER RIGHT WITH PLASTERITE


The Right Way
Pressure resisted by flat surface of strand
Pressure from Plasterer forces mortar thru lath
The Wrong Way

In Applying Metal Lath It Is Essential to See That the Top Side Is Up Providing Miniature Shelves on Which the Plaster Is Supported.

tically no space for keys. This saves plaster for him, but that does not mean that his price will be any less to the owner. When the lath is wet the wood expands, pinching off the keys and cracking the plaster. That is why the men who devised the above specifications are insistent that the width left for the key of the plaster both at sides and ends of lath is important.

Plaster board comes in sheets of different sizes, varying in thickness from ¼ to ⅜ inch or more. It is usual to specify 1¼ inches, 11½ gauge, 7/16-inch head wire nails for nailing set not more than 4 inches apart, each nail to be driven firm and tight. The board is nailed first in the middle then on the edges.

It is important that the board be placed not less than ¼ inch apart at all horizontal or other joints which do not come on studs or joists. All vertical or other joints coming on joists or studs are butted tight.

Each nailing edge of the board must have a bearing on studs and bases of not less than ¾ inch.

The placing of the board to allow the ¼ inch key for the plaster in the horizontal joints or wherever possible is most essential, since this is the only opportunity given for keying the plaster to the base, the rest of the surface depending entirely on adhesion to bind the plaster to the base.

The joints must be broken at right angles with the wall studs and at right angles with the ceiling joists. Perpendicular joints on opposite sides of a partition must not be on the same stud.

It also should be noted that satisfactory results will not be obtained unless the plaster is at least ½ inch thick. The grounds should be ⅞ inch.

The increasing use of metal lath in construction of all types has brought many inquiries for details of the best method of applying this material. The intelligent use of metal lath demand that the right weight be chosen for the positions in which it is to be used. For walls the metal lath should weigh not less than 2.2 pounds per square yard, but a heavier weight is stiffer and many believe is a real economy for the ceiling to use not less than 3 pounds. For stucco work on exteriors different weights are required, which will be discussed later.

Metal lath comes in bundles of about one dozen sheets. Each bundle will cover from 16 to 27 square yards, depending on the style of the lath. This information should come from the material dealers. All of the sheets are approximately 96 inches long and will span eight studs or joists 1 foot on center, or 6 joists or studs, 16 inches on center. The width varies from 16 to 27 inches.

The material can be cut easily with ordinary lather's shears. It should be attached to the wood studs or joists by not less than 6 penny nails driven to a penetration of not less than ⅞ inch, and bent over to engage two strands of the lath. In place of nails, ¾ inch No. 14 wire staples may be used. Nails or staples should be spaced 6 inches on center and should be placed so that one occurs where upper and lower edges of sheets lap at supports. If a rib lath is used, the nails or staples should hold the ribs on the walls and the nails should be bent upward. Nailing or stapling should start at the center of the sheet and work outward, to make the sheet lie flat and to conserve plaster.

The lathing should be started on the ceiling of the room, bending the ceiling sheet down 6 inches on the side walls. If the floor above is not of wood joists, lathing should be started at the top of the wall and worked downward. The lath should be bent into vertical corners by carrying around 6 inches on to masonry walls, or if the adjoining wall is of wood studs, start sheet there, one stud away from the corner. The material may be treated roughly with a lather's hatchet to tuck it into the corners. No butt joint should be permitted in any corner.

It is essential in applying metal lath to be sure that the top side is up. The strands of diamond lath are tilted slightly. Care should be taken so that the strand is tilted down and away from the worker. This provides miniature shelves on which the plaster is given support and assists the plasterer greatly in getting a good job.

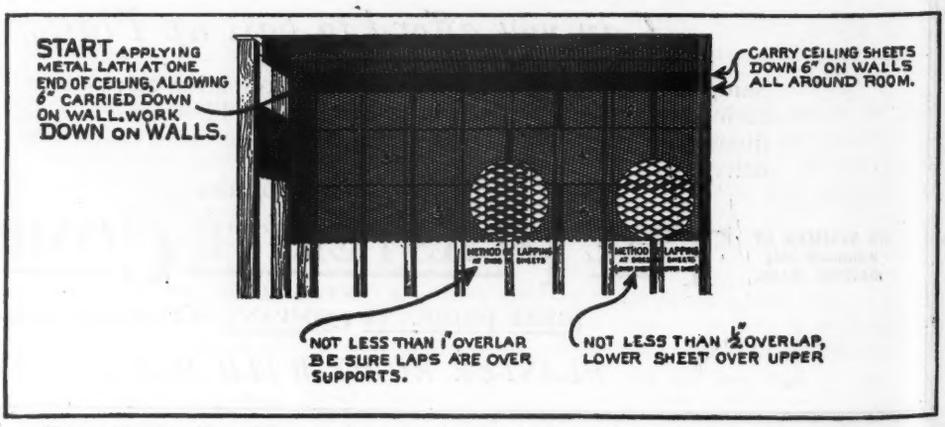
In starting the metal lath at the top of the room and working down, lap the lower sheet over the upper not less than ½ inch in the case of flat lath. Where rib lath are used, merely to the next rib. This manner of lapping the lower sheet over the upper prevents catching the trowel when the plasterer works his trowel upward. The ends of the sheet should be lapped only over supports and the lap should be not less than 1 inch. Adjacent sheets of lath should be wired together once between supports to prevent bulging and to stiffen the surface under the trowel.

✣

"Board Feet or Bored Timber?"

PINHOLE borers, wormhole borers, ash borers, pine sawyers, ambrosia beetles, powder pest beetles, and other animated gimlets which wreak enormous losses to loggers and lumbermen through their attacks upon cut logs and seasoned timber, are the targets for an attack by the Bureau of Entomology, United States Department of Agriculture, in an educational motion picture, "Board Feet or Bored Timber?"

All together these "borers" cause annual losses amounting to more than $40,000,000. The ways of fighting them, as graphically demonstrated in the film, vary according to their habits, but are extremely simple.


START APPLYING METAL LATH AT ONE END OF CEILING, ALLOWING 6" CARRIED DOWN ON WALL. WORK DOWN ON WALLS.
CARRY CEILING SHEETS DOWN 6" ON WALLS ALL AROUND ROOM.
NOT LESS THAN 1" OVERLAP BE SURE LAPS ARE OVER SUPPORTS.
NOT LESS THAN 2" OVERLAP, LOWER SHEET OVER UPPER

There Is One Best Way of Applying Metal Lath and This Order Should Always Be Followed with Careful Attention to the Correct Lapping of All Joints and Wiring to Prevent Bulging and Stiffen the Surface.

SANI ONYX HAS A PLACE IN EVERY MODERN BUILDING

A complete Sani Onyx installation. The Sani Onyx side walls and ceiling carry out the idea of complete cleanliness

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SANI ONYX makes good buildings better when used as walls, wainscoting and ceilings in bath rooms, toilets, kitchens and halls. It combines the best features of quarried marble, tile and slate with other advantages exclusively its own, such as resistance to wear, acid, alkali, moisture, oil and repeated cleanings.

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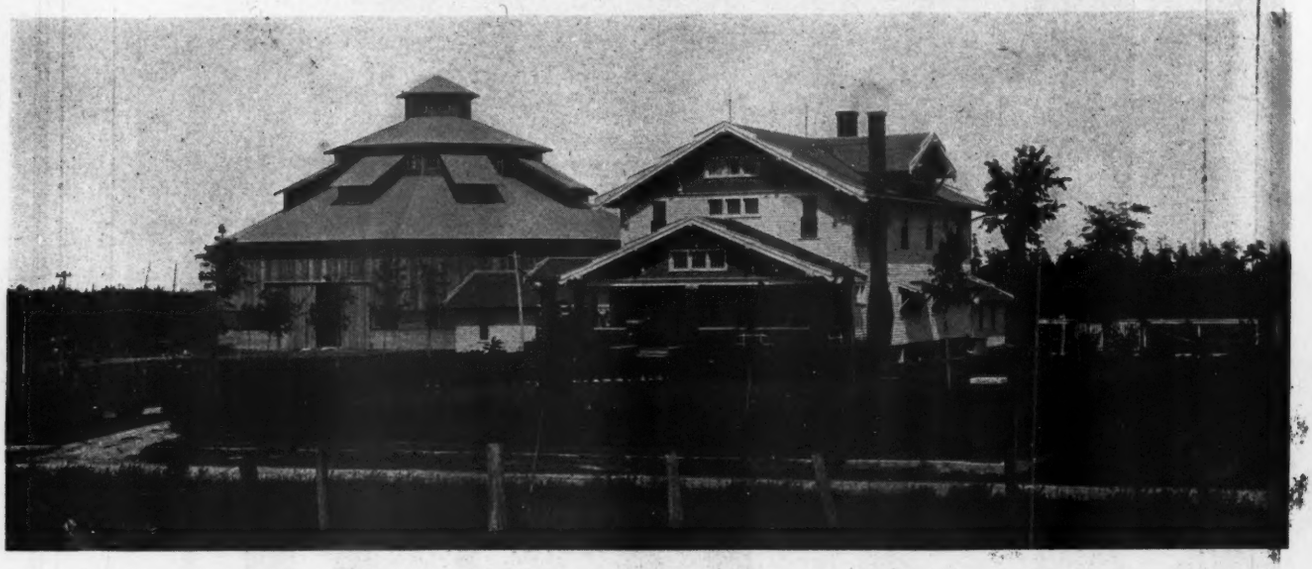
Something Different in Barns

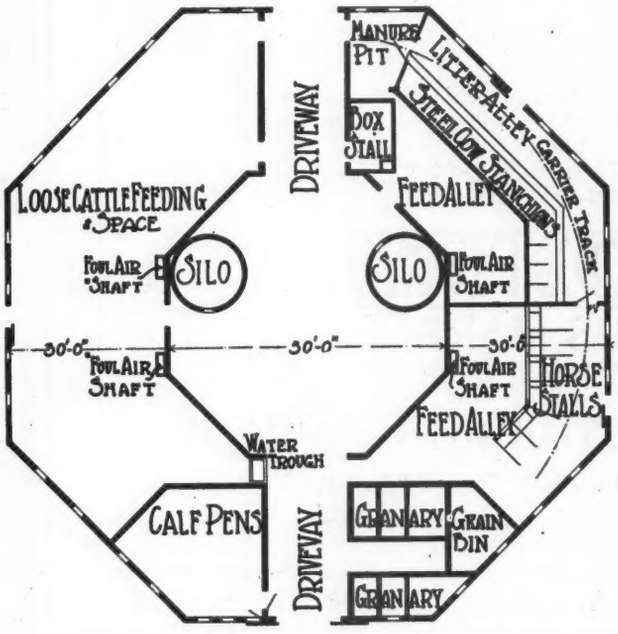
Novel Octagon Barn is the Most Striking Feature of this Well Kept, Attractive Farm Home



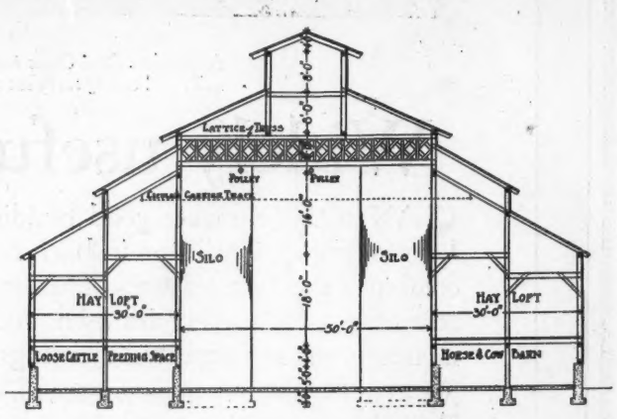
A Farm Home Which Might Well Be Taken as a Model by Those Who Are Planning to Build in the Country Is the Residence of J. L. Purdy, of Gagetown, Mich. House, barn and grounds were all planned and worked out as complete unit by John Monroe, of Albion, Mich.

ANYONE who happened to be in the vicinity of Gagetown, Mich., would find it worth while to get a view of the farm home of Mr. J. L. Purdy. The most striking feature of this group of buildings is the novel barn which is octagon in shape. However, the house is equally worth seeing and the whole group with its well laid out and careful tended grounds is a fine example of what a home in the country may be. The building of the house and barn, as well as the planning and arrangement of the grounds, were the work of John Monroe, formerly of Gagetown but now of Albion, Mich.

Mr. Monroe built the barn from his own plans. It is



The Octagonal Shape of This Barn Requires an Interior Arrangement Somewhat Different from That Which We Are Most Accustomed to Seeing Illustrated.



Sectional View Showing the Method of Construction of This Novel Building and with Particular Reference to the Lattice Truss Supports for the Roof of the Main Portion of the Barn.

110 feet in diameter, each side measuring 42 feet, and the inside clear space is 50 feet wide. There is a 9-foot basement under the barn. Outside wall posts reach 18 feet above the top of the basement, while 40-foot posts are used for the main part of the barn. The roof of the main barn and the cupola are supported by two lattice trusses 50 feet long. The building is constructed of wood throughout.

One of the unusual features is the construction of two silos inside the main portion of the barn and entirely hidden from the outside. The hay loft occupies the space above the outer portion of the building only, the main portion being open clear to the roof. A driveway runs clear through the building from front to rear and good ventilation is provided by means of several well placed air shafts. There is a ventilator on top of the barn which was installed after the photograph shown here was taken.

One side of the barn is occupied by cow and horse stalls with a feed alley to the granary. The other side is a loose cattle feeding space with a separate division for calf pens.

2½ Tons *Heats 5 Rooms*

"There is no heater to compare with the Bulldog. I burned 2½ tons of coal last winter and heated five rooms and a bath."—Walter Geary, Gloucester, Mass. That's what the Bulldog does with coal! Now read, in the letter of Mr. Redetzke, what it does with about the lowest grade fuel you can think of! Why not cut down *your* fuel bills?

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"I can run my Bulldog Furnace for fourteen days in normal weather conditions *on the actual cost of fifty cents.*" So writes F. R. Redetzke, of Cleveland, North Dakota, and he adds: "Hard to believe, is it? That's what some of my neighbors thought until I showed them! We have an unlimited amount of grain screenings which I use for fuel."

Contractors

Who are in position to buy the Bulldog Furnace in quantities are entitled to a special quantity discount. Write for full information.

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"I had a hot air furnace in our 7-room house before I got the Bulldog and our house was always cold. With the Bulldog it only takes *half as much coal* and we had weather below zero, and the house was nice and warm in the morning when we got up. We never have the draft on more than half an hour at a time, and it has the place red hot. It is easy to regulate and keeps the fire all day in mild weather." Jess T. Conrad, 1211 W. Arch St., Shamokin, Pa.

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Comes Completely Erected. You Install It Yourself.

The Bulldog is sent to you for *free inspection.* Then, if satisfied, you make only small monthly payments at our remarkably low price. Write today. *Don't* miss this chance to cut down your fuel bills! *Install a Bulldog Furnace.* It comes to you completely erected—goes through any door—fits any height of basement—and you install it yourself in less than two hours! In fact, H. B. Keater, of Libertyville, N. Y., says he installed his Bulldog in 28 minutes! *Don't* put up with the old fashioned stove heat or some outworn furnace—when you can so easily get the greatest advance in scientific heating at an astonishingly low price. The Bulldog burns almost *any* kind of fuel, from hard coal to cheap screenings. Keeps a wood fire over night. *We have factory connections in both east and west and ship from the nearest point.*

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Learn how to have all the heat you want—where you want it—and save money! Remember the Bulldog is *different*—and *better!* Complete combustion of gases saves 25% of your fuel bill. Exclusive Gable-Top Radiator receives *all* the direct rays of the fire. Exclusive oblong fire-pot is not only ideal for coal, but enables you to keep a wood fire over night. Remember—the Bulldog is sent for *free inspection*—then small monthly payments at an amazingly low price! Send for Free Book TODAY!

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Textured Interior Walls

So-Called "Rough Wall" an Established and Individual Surface Finish

By A. O. WYKER

By Means of Textured Wall Surfaces, the Living Room of the Good Housekeeping Studio Was Made Over Into a Model of Italian-Spanish with an Ease Which Was a Constant Source of Surprise to the Owners.

THE demand for textured interior wall surfaces has come to stay. Rough walls, as they are rather erroneously called, with their vast possibilities for variety in finish, have taken the place of the more commonplace style of treatment so long in vogue. There is no need here to go into a discussion of the wide field thus opened to painters and decorators, both amateur and professional. Suffice it that when a person knows he can have a room of beauty and distinction, one which gives him a sense of personal pride in ownership, he won't be satisfied with anything less. The preliminary work of introduction is over. The demand for the textured wall will not be denied. The chief question now is how best to get results.

Up to the final perfection of the original material developed for obtaining the texture wall, there had been many ways of approaching the defects. Many painters still make up a combination of calcimine, whiting, glue, etc., which sometimes gives fairly good results, but often comes peeling off the walls when proportions have not been accurately estimated or the surface to be treated happens to be not quite right. Uneven and very limited effects may also be obtained with a lead and oil combination which is ridiculously costly in comparison with the results so laboriously obtained.

And there are other attempts to meet the demand, materials which will work here and not there, mixtures which will set up in the pail if the painter happens to meet with unavoidable delays, and so on ad infinitum. What the builder wants is a material which will always stick to the given surface, which will not set up in the pail, which will give him time to work with it on the walls or ceilings, in short, a prepared material chemically perfected to assure success to the man who uses it.

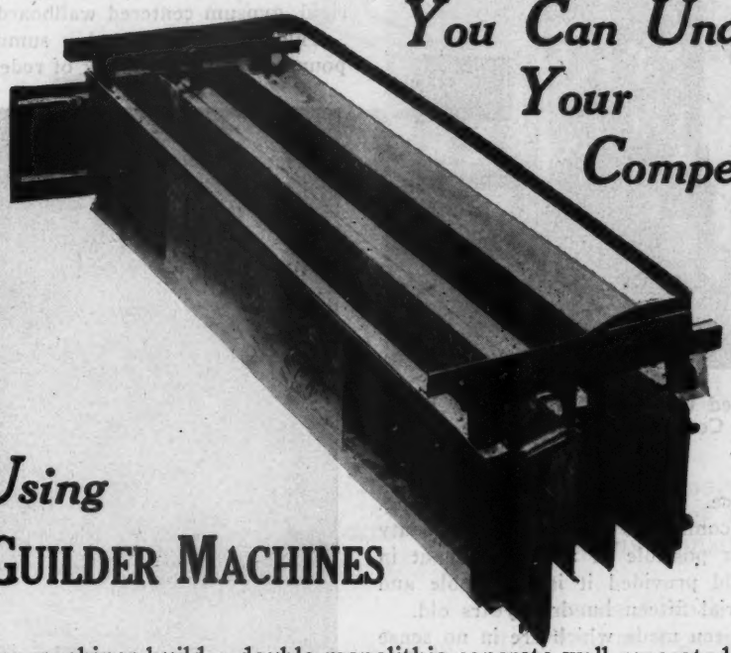
Such a material is now obtainable. Time is the only real test for any product which must meet the battle of daily life and ten years of service is none too much to furnish actual proof of values. When it can be demonstrated that a textured wall applied fifteen years ago with a given material is still in good condition most questions are answered. When this instance can be multipled many times under many different conditions there doesn't seem to be much room for doubt.

"But all your finishes are imitations!" one frequently hears. "You imitate Travertine Marble, Caen Stone, the different European plasters, etc., etc., but it's all imitation." Except for decided inaccuracy in the statement the point is rather well taken.

In the beginning the only way to convince people of the value of the new medium was to copy the beautiful wall treatments of the past. The seal of antiquity is the usual stamp of approval on all things new from the design of clothes to the design of buildings and this has been true

SOLID CONCRETE WALL
CONTINUOUS SEALED AIR SPACE
SOLID CONCRETE WALL

You Can Underbid Your Competitors



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Van Guilder machines build a double monolithic concrete wall separated by a continuous sealed air space unbroken by any masonry. —*Note border of page.*

The simplicity and speed of operation combine to make the Van Guilder System the most economical method of constructing a fire-proof bearing wall:

No forms! Van Guilder machines eliminate forms of every type. **No more sawing, nailing, erecting, stripping!** All these operations done away with by using Van Guilder machines. In addition you are building a double wall.

What would you have to do to build a double wall? Double forms, double labor, double expense. Not so with Van Guilder machines. Read how simply you can do it.

Place the machine pictured above on a concrete footing—fill the machine with concrete—tamp down—then lift releasing lever which immediately collapses the inner core and expands the outer plates. Without loss of a minute's time, the machine is moved along the wall for another 5′ section and the operation is repeated as above around the building line.

The operation of setting machine, filling and sliding, consumes three minutes.

ADVANTAGES

1. Economy—Lowest cost fire-proof bearing wall.
2. Speed—Faster than brick, frame or poured concrete.
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Van Guilder machines are guaranteed to do the work claimed for them or money refunded.

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SOLID CONCRETE WALL
CONTINUOUS SEALED AIR SPACE
SOLID CONCRETE WALL

Textured Surfaces Served to Make This Display Room of a New York Furniture Company an Ideal Place for the Display of Fine Furniture.

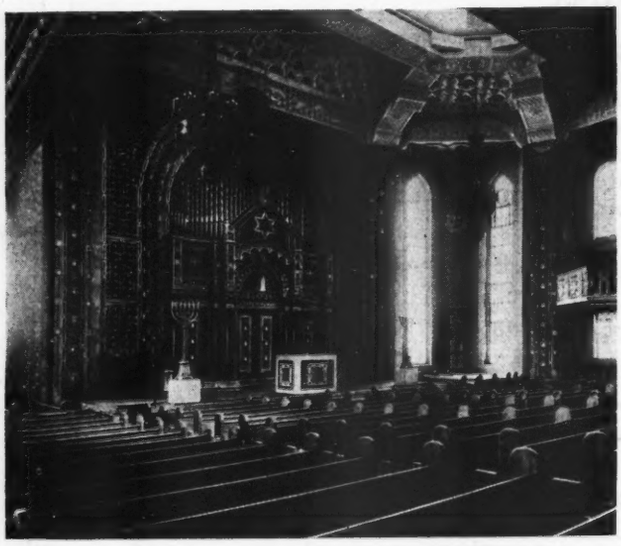
of the textured wall surface. But now the tide is turning. Open minded people are coming to see that sheer beauty and harmony are quite as possible of accomplishment in a product fifteen years old provided it is a suitable and reliable one as in a material fifteen hundred years old.

Finishes have recently been made which are in no sense imitative but which bear all the appearance and authority of antiquity. These finishes are not such and such a plaster imitation or such and such a stone imitation but stand on their own merits as distinct and individual creations of an inherently beautiful medium. To carry this line of thought a little farther it is only necessary to mention the comparatively recent relief work which is beginning to make American mural decoration something absolutely unique in the history of that great art. The ease with which designs may be carried out in bold relief is a source of delighted wonder to experienced artists in this field.

Most interesting also to the particular builder is the fact that textured walls are by no means exclusively meant for the rich man. If such were the case the demand would hardly be sufficient to warrant the production on a national scale of a material suitable for the purpose. The product must be as universal as paint, fit for the carrying out of the most artistic conceptions in mural decoration and adapted also for use in the most inexpensive of cottages where the demand for beauty and permanency must be reconciled to the limitations of a thin purse. Sometimes it is a money-saver in actual dollars and cents when used over one or two coats of floated rough plaster or over one of the rigid, gypsum centered wallboards without paneling.

Think of building a big summer hotel without using a pound of plaster! Think of redecorating a renovated farmhouse with its old, cracked plaster walls by one day's work with a brush! Think of making over your living room into a model of the Italian-Spanish type as was recently done in the Good Housekeeping studio with an ease which was a constant source of surprise to the editors of the magazine! Think of altering an office in one of New York's commercial skyscrapers into a studio with this material on walls, ceiling and even on the floor in an imitation of stone! Think of a material so universal in its uses that it will stick to paint, paper, wood, metal and even glass!

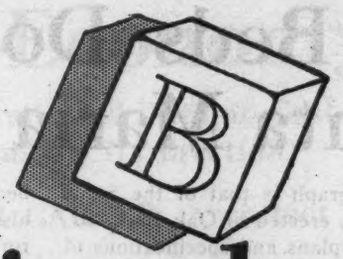
In One Corner of the Good Housekeeping Studio This Unusual and Attractive Fireplace Was Possible Through the Use of This Method of Surfacing.



In the Congregation B'Nai Jershurun, in New York City, Textured Walls Were Used in Producing the Elaborate Decorations Shown Here.

N. Y. Trade Schools Popular

THE Apprentice Commission of the New York Building Congress reports that there are 2,240 apprentices enrolled in the building trades schools of that city at the present time, representing seven of the building trades.



-made simple as

Just published! This remarkable service book—prepared for the practical purpose of helping the builder! Page after page of actual working drawings show you exactly how to use "Walls *of* Wood."

Since Algoma Panels were first brought to the attention of builders through the pages of this magazine, there has been an insistent demand for accurate information on how these panels should be used.

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Portable Beds Double Efficiency of Santa Maria Apartments

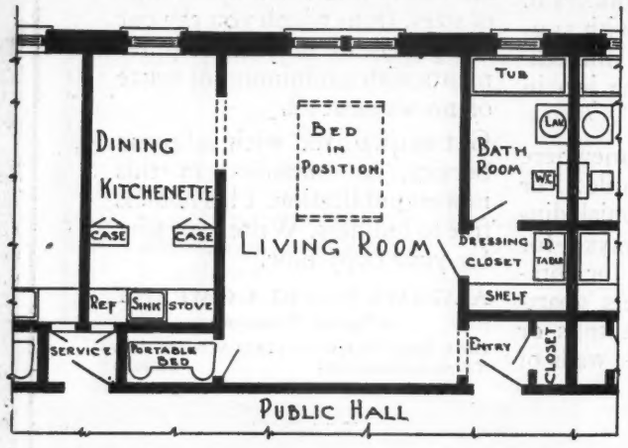
THE accompanying photograph is that of the Santa Maria Apartment Building, erected in Oak Park, Ill., by W. P. Morrisey, under plans and specifications of Mr. Roy France, Architect, Chicago, Ill.

This apartment building is the last word in efficiency in design and space conservation. The architect, in planning this beautiful building, had foremost in his mind the idea of giving the utmost living comfort without losing one inch of valuable space. This is very essential where land values are immensely high. However, this same idea of space conservation is just as essential in building the smaller homes, especially with the present costs of building materials and labor. We show here a typical apartment design with space-saving utilities adaptable for either the home or the apartment.

In the Santa Maria Apartments, ninety seven portable beds were installed together with many other space-saving devices. These devices enable the builder to give his client the same utility in a small house as in a big house or apartment with a consequent saving to the client, both in construction costs and in furnishing costs. These portable beds roll away through any door and can be placed at any window in any room where fresh air is required. They also effect a saving of wall space at point of operation inasmuch as they are preferably rolled to the window where they do not interfere with the furniture. The portable bed effects a saving also in cost of doors. When the bed is stored in the dressing closet, the same door is used also as an entrance to the bath. These beds have real furniture design and finish with open coil helical top spring which afford the utmost sleeping comfort.

It seems that if the builder can show to a prospective client a small compact home at a very fair cost—even in these times of high cost—that a great many people can be sold on the idea of building now who otherwise will delay their building operation or their contemplated building for a long time.

In Chicago and the Surrounding Suburban Region One of the Most Outstanding Examples of Apartment House Design and Construction Is the Santa Maria Apartment Building, Erected in Oak Park, Ill., by W. P. Morrisey, Under the Plans and Specifications of Roy France, Architect, Chicago.



Compact Modern Apartments Are Equipped with Every Space-Saving Device, Including Portable Beds Such as Are Used in the Santa Maria Apartments. These can be set up wherever desired, at night, and can be rolled into a closet, out of sight, during the day.

Improve City Entrances

THE nation-wide campaign, initiated by the National Association of Real Estate Boards, for the cleaning up of properties along railroad right of ways is making most satisfactory progress and is being combined, in a number of cities, with a general campaign for improving the appearance of the entire city. Approximately 80 cities are undertaking, under the leadership of their real estate boards, the improvement of their appearance as presented to travelers passing through them by rail.

Work is being carried on with the co-operation of railroad companies, industrial companies having railroad frontage, civic organizations, the newspapers and business men of the communities. In Long Beach, Calif., the City Council has endorsed the movement and offered the use of city wagons and other equipment.

Improvements vary all the way from temporary screening of city dumps to the tearing down of unsightly, abandoned buildings and the boulevarding of right of ways with trees and flowers.

✣

Code of Ethical Practice

ASSOCIATED General Contractors announce that the Code of Ethical Practice is ready for distribution to the membership of the Association in pamphlet form. This is the code adopted last January, by the Association, which will govern the members in their relations with client, owners and the public, with other agencies of construction and with members of their own profession. It is separated into the following divisions: Owners and the Public; Engineering and Architectural Professions; Sub-contractors and Those Who Supply Materials; Operating in Foreign Territory; Discipline.

An additional supply of copies, beyond those now being sent to members of the Association, will be available for other distribution and quantities of the pamphlet are to be secured at nominal costs.

The Carver-Economy Wall

Part 3—Full Preliminary Details and Data on Cost Properties and Instructions for Its Erection

By WILLIAM CARVER, Architect

Locating the Window Openings:

16. When five or more courses (see paragraph 14) of brickwork with the pilasters have been laid in running bond we are ready for the header course. Before the latter is placed, however, the windows and doors should be located. It will be possible in many cases to slightly shift the position of these openings to make the jambs coincide with the location of one or both of the pilasters. (Fig. 1.) Where this is impossible it will be necessary to build up special pilasters to form the jambs. These should now be started and carried up to the bonding course.

Window Sill:

17. Where brick sills are desired (these being the most suitable for this and all other types of brick construction), place a 2-inch by 2-inch or 2-inch by 4-inch strip (depending on the span) to support the brick on edge forming the window sill, upon which latter the window frame is bedded and placed in the ordinary way. This strip is laid with its face flush with the brick pilasters. On top of each end of the strip is nailed a metal anchor consisting of a short piece of hoop iron or a metal wall tie extending into the brickwork behind.

Supports for Furring Strips on Pilasters:

18. The vertical strips supporting the lath for plastering are 2-inch by 2-inch strips where they occur between pilasters. (Fig. 4.) Where strips are needed in front of pilasters to keep the 16-inch o. c. spacing, these are ⅞ inch by 1½ inches. Provision should be made on the face of each pilaster for attaching these strips. This is best done by building an occasional horizontal plasterer's lath into a joint of every pilaster, these laths occurring about every 2 feet vertically.

19. A plasterer's lath for the same purpose should also be built into the joint between the Flemish header course of the joist support and the stretcher course above. (See various detail sections.)

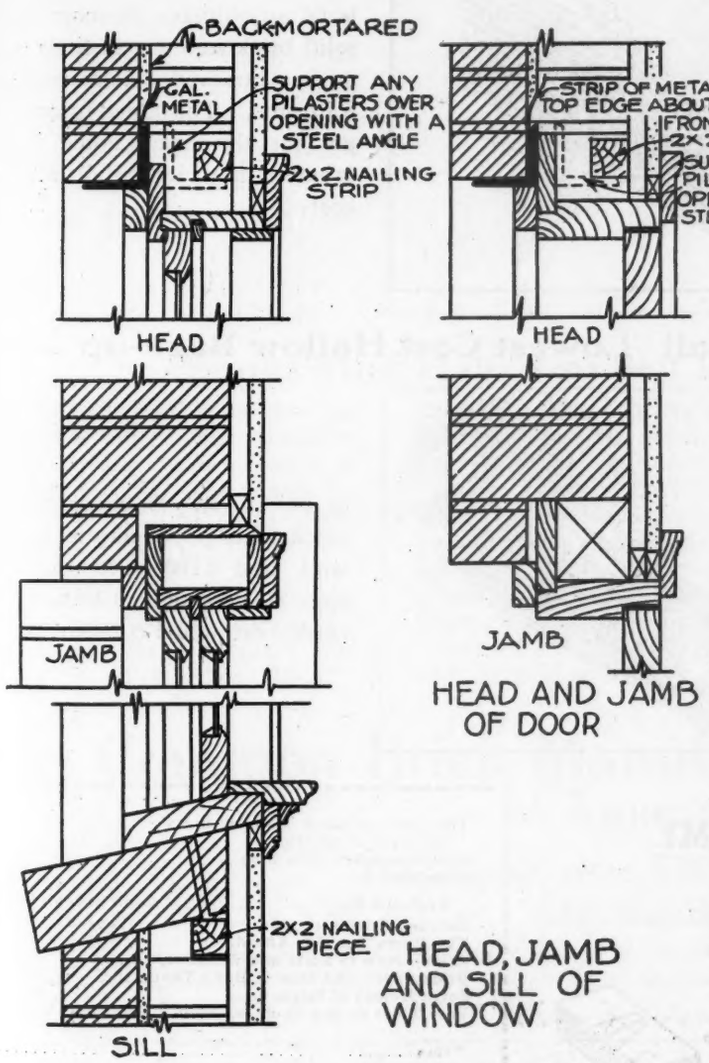


Fig. 5 Window and Door Frame Details.

Construction Over Window and Door Heads:

20. The special pilasters (if any) which were built to form window and door jambs are not carried any higher than the heads of these openings. (Fig. 1.) The exterior 4-inch thickness of brickwork over the openings may be supported either by an angle or by an arch. Where a pilaster occurs over an opening, this should preferably be supported on a steel lintel. Except for very small openings, the thrust of the ends of a relieving arch could not with safety be withstood by the pilasters even if headers should be placed at the intersection. A 2-inch by 2-inch horizontal nailing strip should be provided at the window head for the support of the furring strips. This nailing strip should be anchored into the brickwork in the same way as the strip below the sill.

21. Where no pilaster occurs above the opening, the inside steel angle is not needed, but the 2-inch by 2-inch is needed to support the furring strips and for nailing the trim. Fig. 10 shows details for window and door frames.

Metal Strip Over Window and Door Frames:

22. To eliminate all danger of moisture condensing on the inside of the 4-inch wall and finding its way into the building, a piece of metal (galvanized metal is preferable) about 2½ inches wide and the length of the window or door frame is used as shown in Fig. 5. The edge of the metal is placed between the vertical portion of the exterior steel angle lintel and the brickwork (or between the outside of the frame and the arch, if the outside 4 inches of brickwork is supported by an arch). The portion projecting on the inside of the wall is bent into a horizontal position until the back mortaring is completed, after which it is bent up again with the top about ½ inch away from the pilaster. In this position the metal strip will drain any condensation to the outside of the building.

(Continued on page 278).

Four Brick Walls a

A Real Brick Wall For E

People ***want*** brick homes. They sell easier — they look better—and they offer a range in price to meet every purse. Burned clay is your best friend.

With the new Economy wall, you offer brick construction at the cost of frame. Next is the Ideal all-rolok hollow wall made of standard size brick, costing only a little more.

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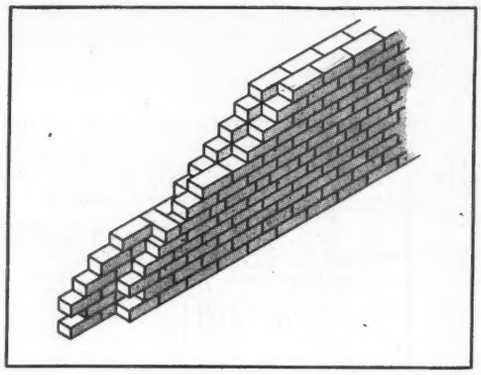
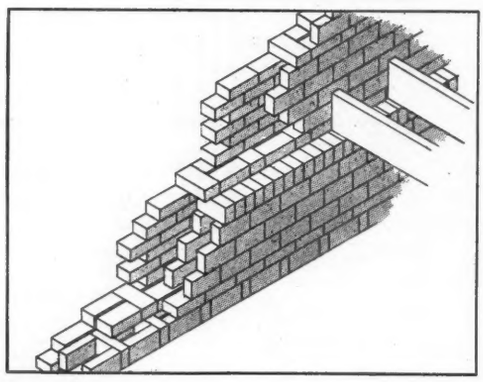
There is no finer wall than one of solid brickwork. It offers greatest fire protection as proved by long experience and laboratory tests. It has the well deserved reputation of keeping the house cooler in summer and warmer in winter. You can



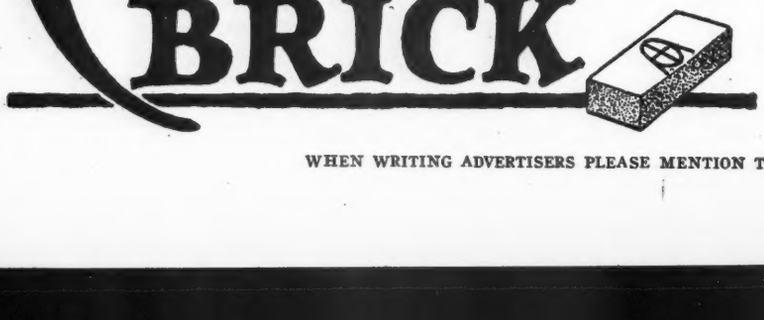
build an ordinary six-room house of solid brickwork for as little as four or five hundred dollars more than for frame. The added price you can get for the brick home is much greater than its small additional cost.

The Ideal Rolok-Bak Wall—Lowest Cost Hollow Back-up

This type of construction costs less than hollow unit back-up. It requires only 4 brick on edge for the back-up in an 8-inch wall. With brick at $15 per M that means only



6c per sq. ft. Bricklayers lay 600 brick on edge per day in the 8-inch wall, and 1100 with the 12-inch wall. These figures have been exceeded on actual construction.



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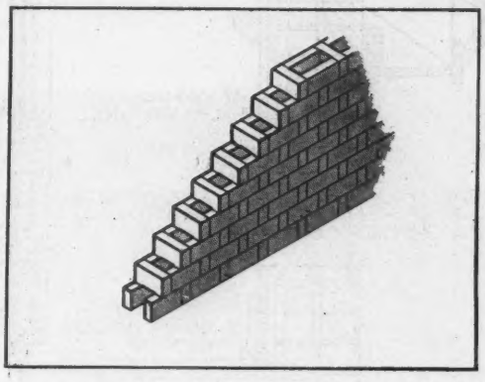
Either Type of Ideal Wall Cuts Cost of Basements

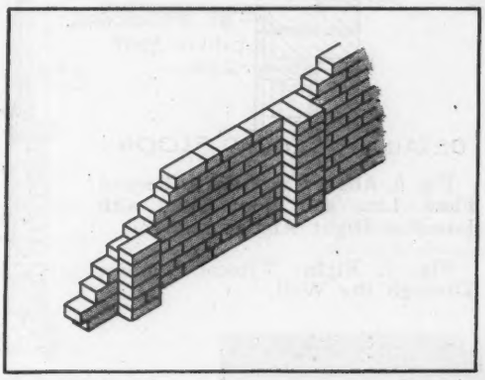
The Ideal Wall basement costs no more than inferior types of construction, and the finished job is so much superior that there is no comparison. This has been the experience of builders everywhere who have actually tried the Ideal wall built with common brick. A test wall recently laid by an official committee of Detroit Union bricklayers to determine the time required to lay an Ideal all-rolok



brick wall 8-inches thick, indicated a production of 1150 brick per day per man, and the Detroit Union has officially approved 1000 as easily possible. By actual, practical performance the Ideal all-rolok brick wall is the lowest cost hollow wall. 9 brick per square foot are required for an 8-inch Ideal all-rolok wall. At $15 per M, that means 13½ cents per sq. ft.

The Economy Wall is Lowest Cost Masonry

Actually, with the Economy wall, first cost for a brick home is no more than for less enduring types of construction. Its exterior appearance is the same as any brick wall. It is safe, strong and dry with all the



known economies of brick in freedom from painting and repair. Economy wall is suitable for small homes, garages, filling stations, industrial housing and other light construction.

Books That Help You Sell Brick Construction

Brickwork, whether it be for the home in the city, town, village or farm, for drives, walks or silos, is what people want. The wonderful reputation of burned clay makes anything built with brick easiest to sell.

You should have the books prepared by this association. Two plan books "Your Next Home" and "The Home You Can Afford" show 120 homes in picture and plan. Working drawings are available for each home shown. (10c each.)

"Brick—How to Build and Estimate" is a practical hand-book used by thousands of builders. It gives details of various brick walls, tables of materials, etc. 56 illustrations, 30 tables, 9 architectural plates. (25c).

"Skintled Brickwork" shows latest and surprising effects in rugged texture walls and shows how to reproduce them. (15c.)

"Brick Silos—and How to Build Them." (10c). "Farm Homes of Brick" (5c.)

Free folders are available on the new Economy wall, and a new folder on the Ideal wall is just off the press. Fill in the coupon and get this complete library.

The Common Brick Manufacturers Association *of* America

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Detroit, Mich.....404 Penobscot Bldg.	New Orleans, La.....904 Carondelet Bldg.	Portland, Ore.....310 Lewis Bldg.
Hartford, Conn.....226 Pearl St.	New York City.....	San Francisco.....811 Sharon Bldg.
Los Angeles.....342 Douglas Bldg.	1710 Grand Central Terminal Bldg.	Seattle, Wash.....524 Burke Bldg.

If It Isn't Burned Clay It Isn't Brick

(*Continued from page 275.*)

Floor Support:

23. This wall is adapted for ordinary two story and attic houses. It is desirable always in a two story house to carry the floor support around on all sides of the building at the second floor line and also across gable wall to support attic joists and special pilasters for attic windows. In addition, this floor support feature renders the house much more fire resistive and stiffens the whole structure. The floor support feature is shown in Figs. 6, 7, 8, 9 and 10, and is constructed as follows:

24. At a distance of 4 courses below the bottom of the joists, corbel out the tops of the pilasters as detailed by using three full headers placed together. Upon these headers place lengths of 2 inches by 6 inches laid flat as shown. Lengths of 2 inches by 4 inches, projecting the proper distance from the wall, may be used instead of pieces of 2 inches by 6 inches. These wood pieces should have a 4-inch bearing at each end of the pilasters, leaving 4 inches of brickwork between the ends of the pieces. The wood pieces are supported by brick "shims" to make the top come level with the top of the brick in the course. Upon this wood member is laid a "Flemish header course" 8 inches thick, as shown. (Fig. 2.) On top of the Flemish header course is placed a stretcher course. The lengths of 2 inches by 4 inches or 2 inches by 6 inches are laid in the wall primarily to give the floor construction the necessary stiffness during the course of erection, and to provide nailing for the vertical furring pieces.

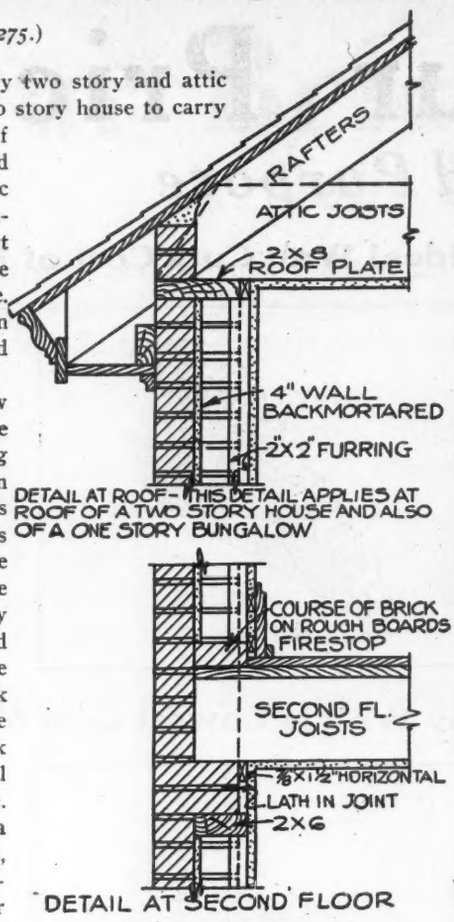

RAFTERS
ATTIC JOISTS
2X8 ROOF PLATE
4" WALL BACKMORTARED
2X2 FURRING
DETAIL AT ROOF—THIS DETAIL APPLIES AT ROOF OF A TWO STORY HOUSE AND ALSO OF A ONE STORY BUNGALOW
COURSE OF BRICK ON ROUGH BOARDS FIRESTOP
SECOND FL. JOISTS
⅛X1½" HORIZONTAL LATH IN JOINT
2X6
DETAIL AT SECOND FLOOR

Fig. 6, Above: Section at Second Floor Line and Roof Line, with Joists at Right Angles to Wall.

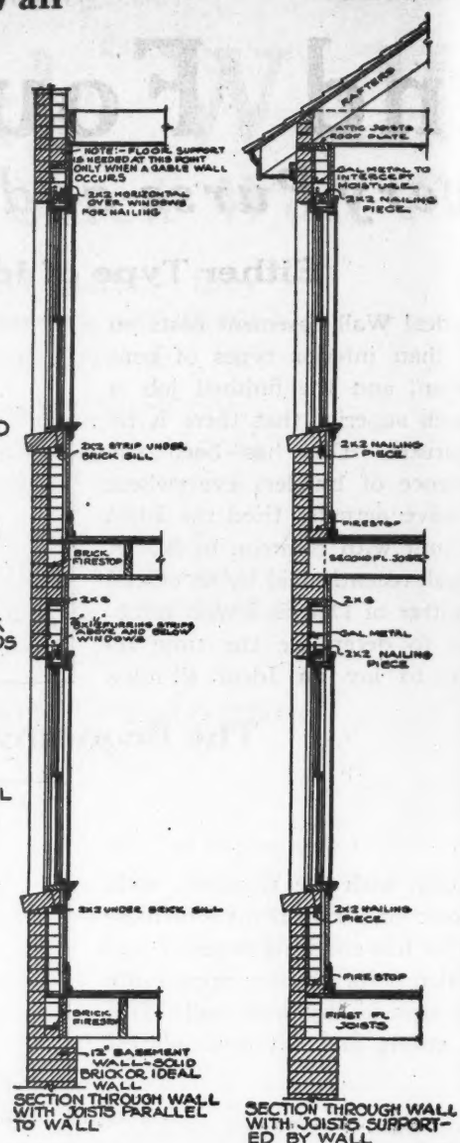
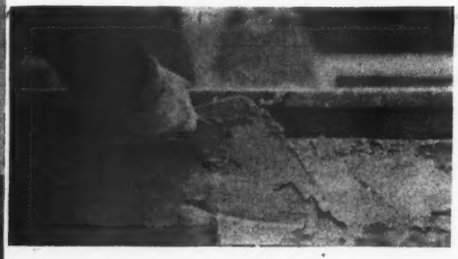


Fig. 7, Right: Typical Sections Through the Wall.



Left: Nailing Anchor on Two by Two Strip.
Above: Backmortaring the Wall.

25. When the wall has been built a few courses above the second floor level the wood member is not necessary for the support of the floor.

(*To be concluded in July American Builder.*)

✣

Roof Framing

(*Continued from page 258.*)

2. Find the length of the rafter for the front part of the house.

3. What numbers on the square should be used to lay out the top and bottom cuts for these two rafters?

4. The dormer rafter has a 33-inch rise per foot run. What is the total rise in 10 feet?

5. The length per foot run for a rafter having a 3-inch rise per foot run is given on a rafter table as 12.57 inches. What is the length of the rafter for the dormer?

6. What numbers on the square may be used to obtain the top and bottom cuts of this rafter? Give two sets of numbers that may be used.

Answers

1. The rafter has a run of 11 feet. The length per foot run is 14 5/12 inches. The total length is $11 \times 14\ 5/12 = 154\ 55/12 = 158\ 7/12$ inches, or 13 feet, 9 inches.

2. The length of the rafter for the front part of this house is $16 \times 14\ 5/12 = 224\ 80/12$ inches $= 230\ 8/12$, or 19 feet 2 2/3 inches.

3. The rise per foot run is 8 inches; therefore, use 8 on the tongue and 12 on the blade to obtain the top and bottom cuts for the two main rafters.

4. The total rise for the dormer rafter is $10 + 3 = 30$ inches, or 2 feet 6 inches.

5. The length per foot run of the dormer rafter is 12.37 inches and there are 10 feet in the run. The total length, therefore, is $10 \times 12.37 = 123.7$ inches, or 10 feet 3.7 inches (10 feet 3 11/16 inches).

6. We may use the numbers representing the total rise and the total run. (The total rise is 2½ feet and the run is 10 feet. Therefore, we may use 10 on the blade and 2½ on the tongue to get the top and bottom cuts for the dormer rafter.

As the rise per foot run is 3 inches we may also use 3 on the tongue and 12 on the blade to lay out the top and bottom cuts for this rafter.

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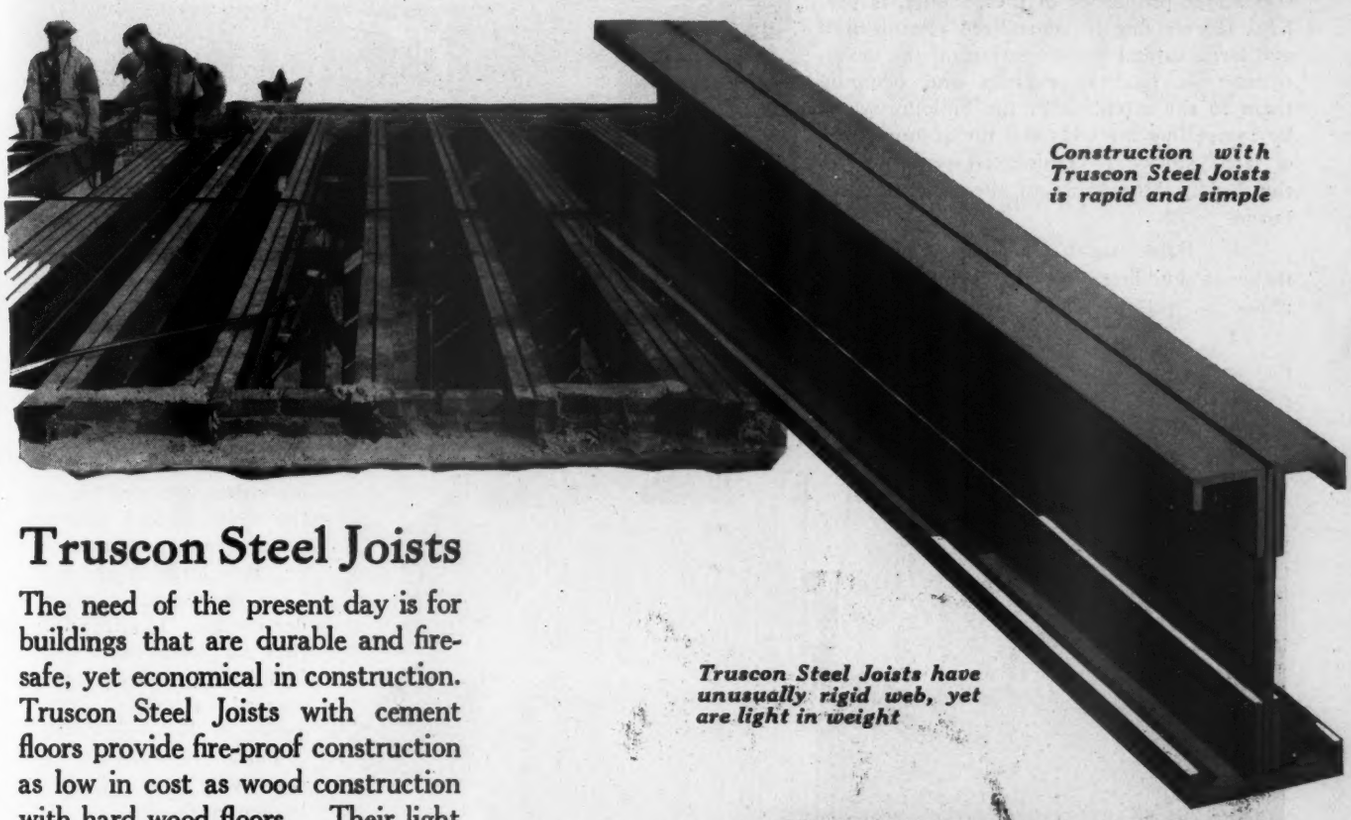

Construction with Truscon Steel Joists is rapid and simple

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The need of the present day is for buildings that are durable and fire-safe, yet economical in construction. Truscon Steel Joists with cement floors provide fire-proof construction as low in cost as wood construction with hard wood floors. Their light weight effects substantial savings in the supporting framework. Truscon Steel Joists save time and labor in erection; several floors can be placed at the same time. They are the ideal construction for light - occupancy buildings of all kinds.

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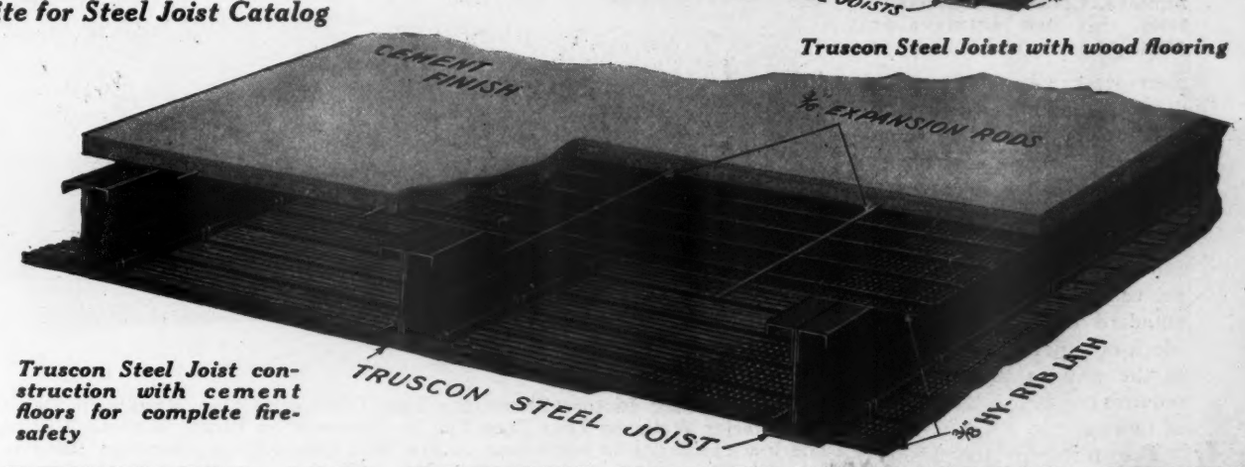


Truscon Steel Joist construction with cement floors for complete fire-safety

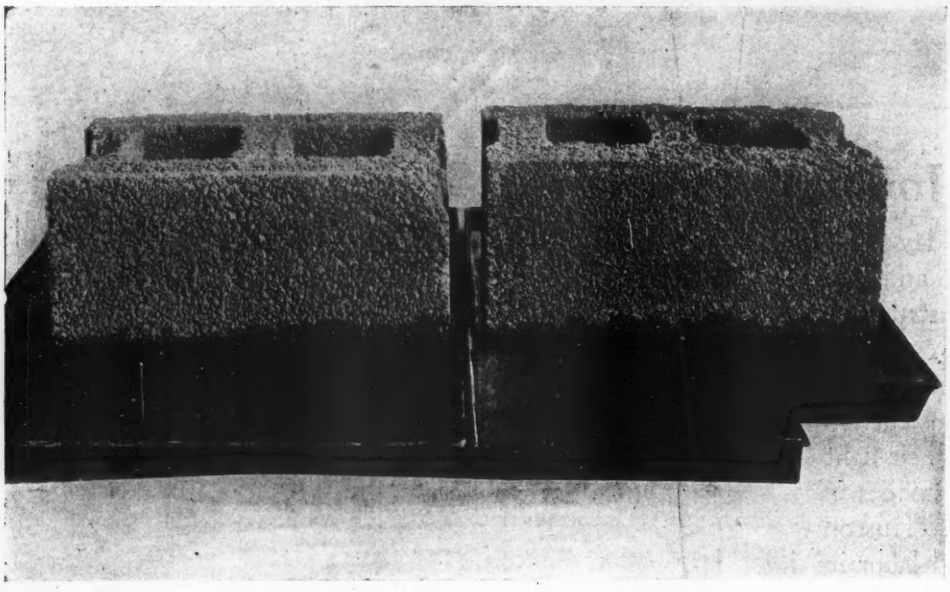
WAREHOUSES AND OFFICES IN ALL PRINCIPAL CITIES

Cinder Concrete Building Units

WHILE the progress in the expansion of the standard sand concrete building block business has been remarkable, the development and expansion of the cinder concrete building block industry has been phenomenal. This growth, while reflecting the unique properties of the product, is perhaps largely due to centralized organization and large capital concentrating on the development of quality products and bringing them to the attention of the building world by compelling methods and the accumulation of large stocks in commercial centers from the Rocky Mountains to the Atlantic Seaboard.

This light-weight, fire-past aggregate makes a building unit that will take nails about as yellow pine. It is damp-proof,

Stock of Cinder Block in the Storage Yard of the Hollywood Building Block Co., Allentown, Pa.

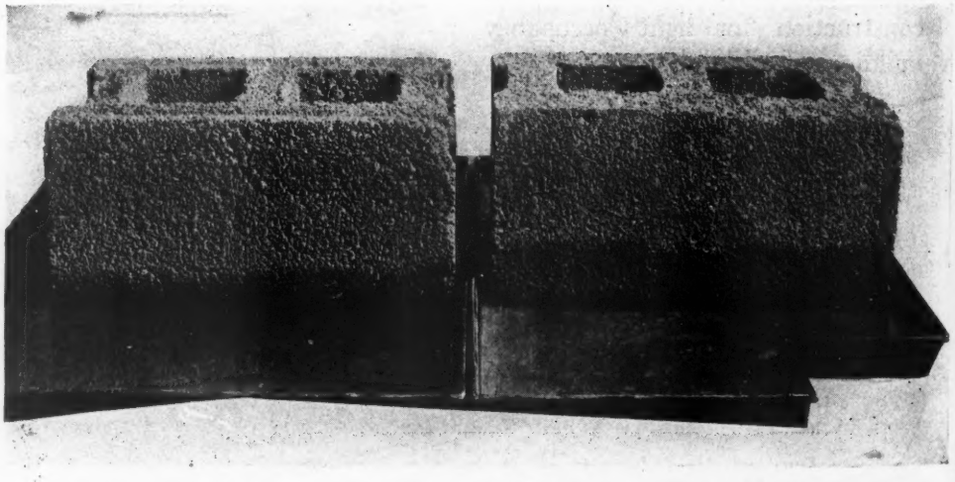


The 10-Minute Absorption Shows the Quick Suction Which Makes for Rapid Laying of Straub Blocks and Gives Them Unusual Winter Laying Properties. Absorption in 10 minutes, Columbia University tests, ½ inch immersion constant.

therefore can be plastered on direct without furring and lath, and effects further economies in lowering cost of applying grounds and requiring less material and labor. It weighs 40 per cent less than sand concrete blocks and 60 per cent less than brick. One standard 8 by 8 by 16-inch block occupies the same space in the wall as 12 bricks and requires one-fourth the amount of mortar.

The tests by the Underwriters Laboratories of the National Board of Fire Underwriters, as well as numerous actual fires, have strikingly demonstrated that under the most violent changes of temperature, no cracks, spalls or deterioration have ever been developed in good cinder blocks. The freezing and thawing tests made by Columbia University showed increased strength after 20 cycles of 24 hours each.

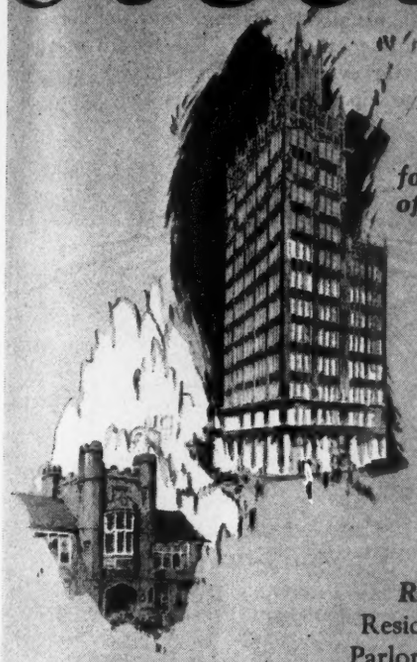
These are some of the reasons why one of the best known authorities in the industry, after four years of exhaustive study, said: "Cinder blocks are the greatest development of this generation in building units."



The 48-Hour Picture Shows the Low Capillarity That Results in Dry Cellars and Dry Interior Walls, so That They Can Be Plastered on Direct Without Furring and Lath. The low capillarity is equivalent to low heat conductivity, therefore there is never any "sweating" on these cinder blocks. You will note the denser block shows the greater capillarity. A sand block or a brick on end in the same pan of water would have shown moisture within a couple of hours. Absorption in 48 hours, Columbia University tests, ½ inch immersion constant.

Architectural Fenestra

steel window



When windows built of steel provide so many extra advantages without extra cost, is it any wonder that they have steadily replaced wood windows? You've watched the change from wood to steel?

When Fenestra produced the first steel window in America 17 years ago, this change in window construction was started. Since that time it has taken place in one type of structure after another, until today you have a *suitable* type of Fenestra Steel Window for every building you plan. And further than that, you can get most of these types from your local lumber or building supply dealer. You can have them delivered quickly and conveniently with your other building materials.

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Residential Fenestra including Casement Windows for: Residences, Apartments, Dormitories, Sleeping Porches, Sun Parlors. Basement Windows for every type of Foundation Wall. Utility Windows for Private Garages.

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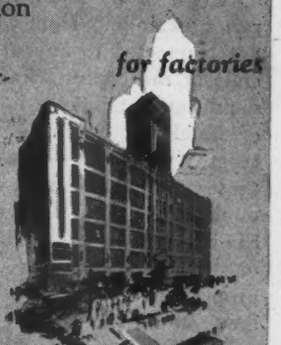

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schools and institutions
commercial buildings
all industrial structures

All Rafter Cuts by Power Machine

How to Reduce Costs on Roof Framing by Using a Power Woodworker

MR. JOHN T. NEUFELD has been presenting some very instructive articles on roof framing, and how to get all the cuts on the steel square. Many builders are now equipped with power woodworkers on the job or in the nearby shop and it will save a lot of time and labor if all of these rafter cuts can be made by machine instead of by hand sawing.

Taking a typical hip roof with projecting wing which gives us every kind of rafters, we will demonstrate all of the cuts the way they are made on a power machine which has a tilting table and a swinging arbor saw.

The upper part of Fig. 1 illustrates an ordinary hip and valley roof. The lower part shows this same roof in plan or as it appears when looking directly down upon it.

"A" is the plate on which the rafters rest. This is ordinarily built of two by fours or two by sixes, with squared off ends, making a butt joint at the corners. On the woodworking machine this cut is very simply made—a straight right angle cut-off with the table level and the cross-cut gauge set at right angles to the saw.

"B" is the ridge board which can be made of one-inch material. The ridge board is not always used and in many cases is not necessary.

"C" is a common rafter. This is a rafter extending from plate to ridge and not connected to any other rafter. Both ends of the common rafter are given the plumb cut, and there is also the seat cut or notch, to be made where the rafter crosses the plate. The proper slope for these cuts, of course, depends on the pitch of the roof. After a pattern rafter has been made, adjust the cross-cut gauge on the woodworking machine to the proper angle to match the pattern, and then all of the common rafters can be quickly cut.

For notching the common rafters at the plate, the dado head is convenient. The saw table is tilted to the proper angle and lowered to the point so that the dado head will cut into the full depth desired for the notch. After all of the rafters are run through for the first cut the table is raised just a little and a second cut with the dado head is made to complete the notch.

Thus the common rafters are quickly cut to length and to the proper bevel on both ends, and the notch where the rafter rests on the plate is cut out.

"D" is the hip rafter. This is the rafter that forms the hip or ridge in the roof, usually extending from the corner of the building diagonally to the ridge. The length of the hip rafter is 17 inches for every 12 inches of the common rafter. The cuts of the hip are the same as the common except that in addition to the plumb cut it is necessary also to miter the hip to a point on its own center line so that the hips will fit together snugly where all come

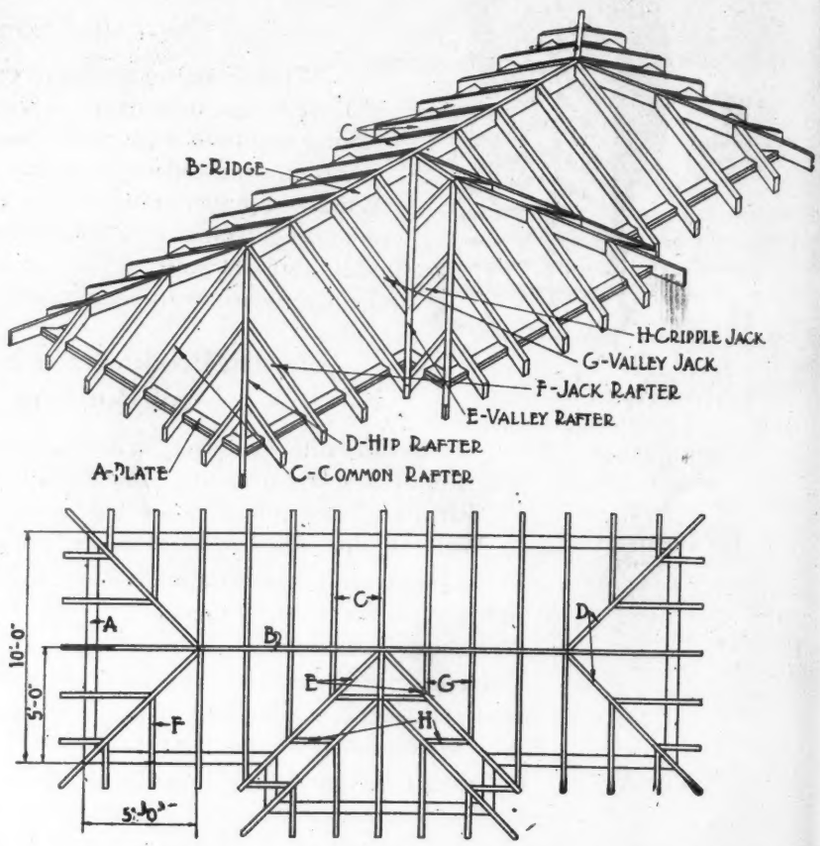

Fig. 1. Illustrating Parts of a Hip Roof. The lower figure shows it as it appears from above.

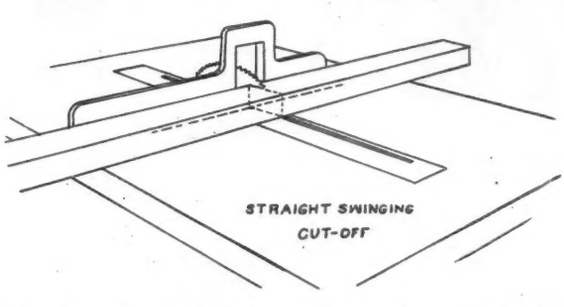

Fig. 2. Squaring Off Ends on Power Saw—Table Level, Gauge Square.

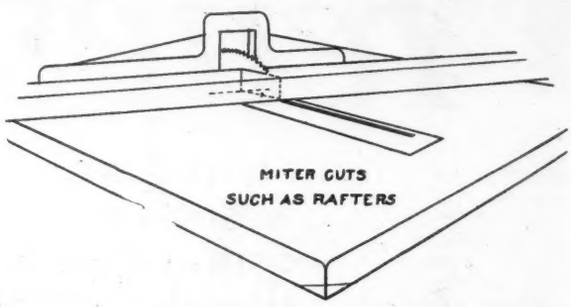

Fig. 3. Cutting Off Rafter Ends—Table Level, Gauge Set at Angle.

THE "PRESTO" Disappearing Sliding Stairs

"WORKS LIKE MAGIC"

BUILDERS: Here's your opportunity to make extra profit! All new homes and many old ones are prospects. Many people want that extra room in the attic, but don't know how to arrange for it. A "Presto" Stairway is the answer. Saves nearly half a room—slides up out of sight when not in use.

Easy to Install **Practical** **Simple** **Efficient**

Panel Only Visible When Closed

This illustrates a stairs installed in hallway. Quickly accessible, easy to operate.

Some of Its Many Advantages

It replaces the space-devouring stationary stairway and provides quick and convenient access to upper floor.

It is often used as a ventilator by leaving the stairs in a half open position.

It is inexpensive, not alone in first cost, but in installation. Any carpenter can put it in an old home in a day's time at the most, and in a new home prepared for it in a few hours.

It is being used extensively to make livable rooms out of attics in houses and bungalows.

Also used frequently in garages, office buildings, schools, hospitals, summer cottages, etc.

Cut shows the "Presto" tucked away in attic when not in use. Very little space is needed.

A Wonderful Space Saver

It is estimated that $500 to $1000 is added to the value of any house where our sliding stairs is installed.

The "Presto" makes it possible to utilize that space in the attic which otherwise might be wasted. The space can be used as a playroom for the children, a spare bedroom, drying space, poolroom, etc.

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Gentlemen:—Please send me detailed information on the "Presto" sliding stairs.

Name.....

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State.....

Business.....

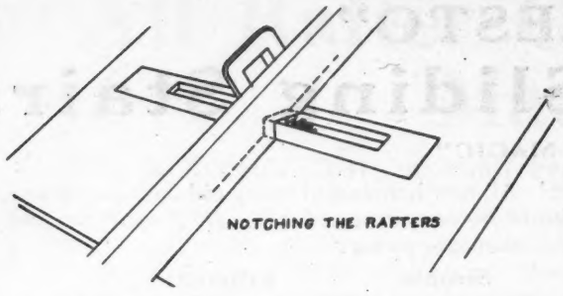


Fig. 4. With Table Tilted the Dado Head Cuts Out the Seat Notch in Two Bites.

together at the peak of the roof. These mitering cuts are easily made on the power saw by tilting the table and adjusting the cross-cut gauge.

"E" is the valley rafter. This is similar to the hip except that it forms a valley or depression in the roof instead of the ridge or hip.

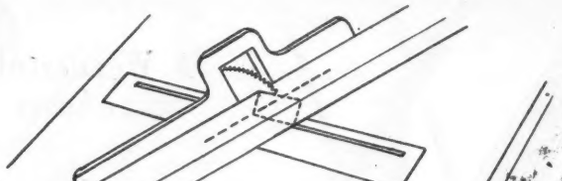


Fig. 5. Double Mitering Is Done by Tilting the Table and Angling the Gauge.

"F" is a jack rafter. The tail cut and the notching are the same as for the common rafters and are handled similarly on the power woodworking machine. But for the cut where the jack fits against the hip, the double miter is necessary and this again is easily handled by tilting the table and adjusting the cross-cut gauge to the proper angle.

"G" is a valley jack. The top cut is simple, but the

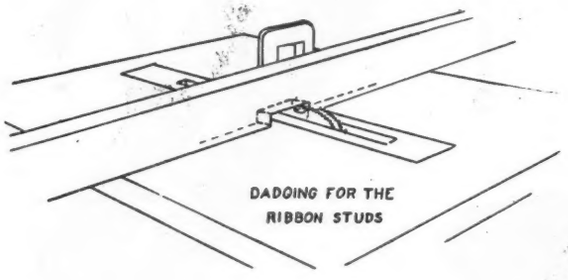


Fig. 6. Dado Head Notches the Studs for Ribbon.

bottom cut comes against the valley rafter and requires a double miter which is handled the same as for the jack rafter. In fact, the valley jack is simply a jack rafter reversed.

"H" is a cripple jack, or short rafter cut in between a hip and a valley. They are uniform in length but each end has a double miter which can be very easily handled on the woodworking machine by setting the cross-cut gauge and tilting the table to the proper angle.

Other cuts frequently required in framing a building are to notch the studs for the ribbon which supports the joists. This notching is very easily done on the power wood-

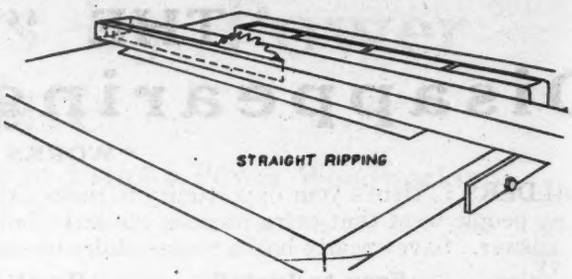


Fig. 7. Table Straight for Straight Ripping.

worker by using the dado head. The dado head, in fact, is a very useful tool, is handy for rabbetting and grooving such as is often required. Then with the saw and the ripping gauge, straight ripping is done with the table flat; or

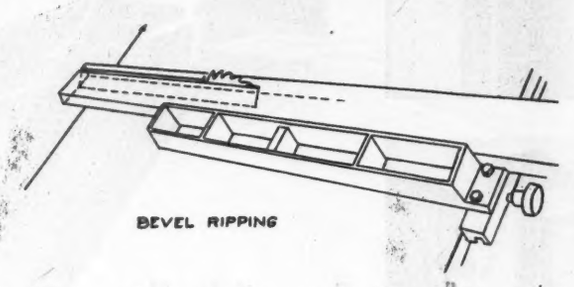


Fig. 8. Table Tilted for Bevel Ripping.

by tilting the table, bevel ripping is handled easily and accurately.

Old, experienced machine operators learn many little tricks and stunts which let them get away with all kinds of work on the machine—work which, to the novice, would

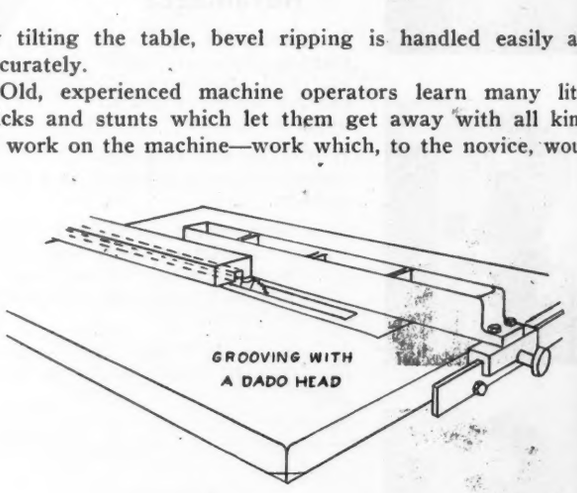


Fig. 9. Grooving with Dado Head.

seem impractical if not impossible. But it is with experience and use that the full value of the modern power woodworker on the job, with its various attachments, is fully realized.

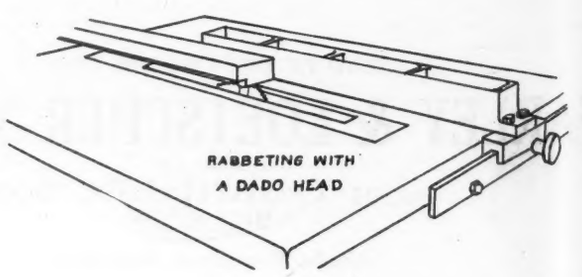


Fig. 10. Rabbeting with Dado Head.

CONSTRUCTION PROGRESS DEPENDS ON EQUIPMENT

Power Is the Genie Which Speeds Up Work

BUILDING—the most ancient of arts—has made wonderful progress through the application of power. Power multiplies production and sets the mark of efficiency ever higher.

Each year's developments in labor-saving machinery and mechanical efficiency mark new milestones in the march of progress. Looking back into history, former methods have passed away. The modern builder has at his command giant derricks, steam shovels, hoists and cranes to aid him in fabricating buildings. The same principle of substituting machinery and power for human labor is constantly finding more extended application. More of the cutting, molding and fabricating of building material is being done, each year, by mechanical means. Power saws, woodworkers, concrete mixers, excavators, conveyors, floor surfacers and dozens of other power tools and equipment are continually speeding up the work and saving human labor. There is a continual improvement, also, in the design and manufacture of hand tools, making for greater convenience and precision in building work.

The controlling element in building costs is labor and there is an admitted shortage of skilled building labor. Power tools and labor-saving equipment are, therefore, becoming of greater importance each year. They are and will continue to be the main factors in preventing building costs from becoming prohibitive. Improvement in quality and reduction in costs is bound to stimulate the building industry and benefit both builders and building labor. The artisan, the mechanic—even the craftsman—can increase both the quantity and the quality of his output by the increased use of power and mechanical equipment. By these means the workman becomes the master—power, the slave.

For Reference and Checking List of Building Materials See Pages 189 to 203

BUILDERS REFERENCE AND CHECKING LIST

Contractors' Equipment Section

POWER tools, gas, steam and electric contractors' machinery of all kinds are included in this list, as well as equipment for the woodworking shop and hand tools for the various building trades. It will pay any builder to look over this section carefully and decide whether additional equipment would not reduce time, costs and labor and increase his volume of work and profits.

Labor-saving appliances will usually more than pay for themselves so that it is an extravagance not to have them if the job at all justifies their use. Right here is where many builders on small contracts go astray. They often assume that it does not pay to take any special equipment to a small contract. The foundation footings, cellar floor and outside walks will justify a concrete mixer on almost any residential or store building job. A power saw or woodworker will also justify itself on most small work if it is only to cut the rafter beams, boards and do the ripping and jointing. In fact, there are a great many appliances, such as steel scaffold brackets, floor surfacers and numerous other items which are profitable for most builders.

Many builders use enough concrete masonry to justify them in making their own block and tile. Started as a side line, often it has developed into a profitable business by itself, as the use of these products has steadily increased.

When builders are handling big jobs, such as steel frame, reinforced concrete, mill construction and similar work, the more completely equipped they are with power tools and labor-saving appliance, the lower will be the completed cost of the buildings and the more satisfactory and profitable to all concerned.

Attention is called to the arrangement of the contractors' equipment list which follows. For greater convenience, it has been divided into five general groups: BUILDERS' EQUIPMENT MOST COMMONLY USED, HEAVY CONSTRUCTION EQUIPMENT FOR CONCRETE PRODUCTS PLANTS, EQUIPMENT FOR THE POWER WOODWORKING SHOP and HAND TOOLS.

Builders' Equipment Most Commonly Used

Air Brushes
Air Compressors
Automobiles
Auto Dump Wagons
Backfillers
Ball Bearing Chain Blocks
Ball Bearing Sheaves
Bar Benders
Bar Cutters
Batch Boxes—Steel
Battery Charging Outfits
Blasting Accessories
Blocks—Rope
Blow Torches
Blocks and Tackle
Blue Print Machines
Brad Set—Magnetic
Branding Irons

The Materials for This Residential Job Are Being Delivered by Motor Trucks and a Small Tilter Mixer Is Mixing the Concrete for the Foundations.

Brick Clamps
Brick Cleaning Machine
Bridging—Steel
Bridging—Steel-Galvanized
Building Material Elevators
Calking Gun
Canvas Covers
Canvas Covers, Asphalt Treated
Capstan Mounted on Wheels
Cement Sack Baler
Chain and Hooks
Chain Blocks
Chain Clamps
Chain Drills
Chain Hoists
Clamping Benches
Crushers and Pulverizers

CONCRETING EQUIPMENT
- Concrete Carts
- Concrete Inserts
- Construction Forms
- Concrete Torches—Gasoline
- Column Forms
- Form Clamps
- Distributing Towers
- Combination Hoist and Spout
- Inserts
- Masts
- Spouts
- Forms—Metal I Beam
- Forms—Construction
- Forms—Step Molds
- Forms—T Beam and Metal
- Wall Machines
- Wall Machines—Double Monolithic
- Tampers

CONCRETE MIXERS
- Batch
- Hand Wheel Operated
- Tilter with Steel Rim Wheels
- Tilter with Disc Wheels, Rubber Tired
- Drum Type Mixers
- Mixers with Charging Platforms Mounted on Motor Truck
- Power Loaders—Side
- Power Loaders—End
- Continuous Mixers
- Concrete Plant Mixers

Cold Chisels

CONVEYORS
- Apron
- Conveying Machinery
- Gravity Roller
- Portable
- Power Belt
- Power Chain
- Slat

For Complete Checking List of Material and Equipment Used in All Classes of Buildings. See pages 189 to 203.

Equipment and Tools Checking List

Cove Base Machines—Electric
Crabs
Cranes and Derricks—Hand Power
Derricks—Pole
Derricks—Tripod
Derricks—Truck
Crow Bars
Dirt Scrapers
Disc Grinders
Drawing Instruments
Drilling Machinery

DRILLS
- Blast Hole
- Core
- Electric
- Rock

Dryers, Air—Fan Blast
Dump Bodies—Truck
Dump Carts
Dump Wagons
Electric Hammers
Elevating Machinery
Elevator Buckets
Elevator—Portable
Engines—Gasoline
Engines—Kerosene
Engines—Steam
Excavating Plows
Excavators

FLOODLIGHTS
- Acetylene
- Electric
- Gasoline

Floor Polishing Machines
Floor Scrapers—Hand
Floor Sanders—Power
Floor Surfacers—Power
Folding Rules
Forms—Steel Wall and Column
Gin Poles
Glue Pots
Glue Pots—Electric
Gravel Washing Plants
Grind Stones
Tilter Trailer
Hammers, Electric
Hammers, Pneumatic
Hand Carts
Hatchets
Heating Kettles

HOISTS
- Electric
- Friction—Grab Bucket
- Bucket
- Chain
- Concrete
- Hand
- Log Lifts
- Platform
- Reversible
- Rope
- Skip
- Steam

Hot Water Heaters
House Moving Capstans
House Moving Jacks
House Moving Trucks
House Moving Rollers
Insurance—Fire
Insurance—Workmen's Compensation
Jacks—Screw
Ladder Brackets
Ladders
Lettering Guides
Level Glasses
Level Sights
Levels
Levels—Iron
Levels—Line
Levels and Transit Combined
Loaders—Car and Wagon
Loaders—Portable
Log Lifts
Lumber Crayons
Lumbermen's Rules
Mattocks
Measuring Tapes
Mitre Cutters—Hand
Mitre Cutters—Power
Mortar Boxes—Steel
Mortar Mixers—Hand
Mortar Mixers—Power
Mortisers—Hand
Mortisers—Electric
Motors—Electric
Motors—Gasoline
Motor Starting Rheostats
Moter Truck Bodies — Stake Irons and Body Braces
Motor Trucks
Motor Trucks with Elevating Bodies

OFFICE EQUIPMENT
- Account Books—Bound
- Account Sheets—Loose Leaf
- Accounting Systems
- Adding Machines
- Calculating Machines
- Clocks
- Contract Forms
- Desks—Flat Top
- Desks—Roll Top
- Filing Cabinets—Wood
- Filing Cabinets—Steel
- Index Cards
- Letterheads—Engraved
- Letterheads—Printed
- Billheads—Engraved
- Billheads—Printed
- Reference Books
- Statements—Engraved
- Statements—Printed
- Typewriters

Oxy-Acetylene Cutting and Welding Equipment
Padlocks
Paint Spraying Devices
Pebble Dash Machines
Pickaxes
Pinch Bars
Plan Books
Plaster Mixers
Pliers
Poles—Creosoted
Power Drills
Power Hack Saws
Power Hammers—Electric
Power Loaders—Bucket
Power Floor Surfacers—Drum
Power Floor Surfacers—Rotary
Power Riveters—Air
Power Riveters—Hydraulic

POWER SAWS
- Portable
- Bench
- Drag
- Resaw Machines
- Trailer Mounted
- Woodworkers—Portable, Electric Drive
- Woodworkers—Portable, Gasoline Drive

Power Take-Off (Automobile)
Power Tools—Combination Wood and Metal Cutting

PUMPS
- Hand—Force
- Hand—Lift
- House
- Bilge—Automatic Electric
- Steam
- Compressed Air
- Electric Driven
- Gasoline Driven
- Air Displacement
- Centrifugal—Turbine
- Centrifugal—Volute
- Diaphragm
- Drain

Pump Cylinders
Rock Crushers
Rope—Hemp
Rope—Manila
Rope—Transmission
Rope—Wire
Rules—Measuring
Routers—Hand and Stair
Salamanders
Sandpaper
Sawhorse Legs
Saws—Electric
Saws—Jig
Scaffold Brackets—Steel
Scaffold Bracket Fixtures
Scaffolding—Steel
Scales—Weigh
Scrapers—Slip
Scrapers—Wheel
Screen Tacker—Automatic
Screen Wire Stretcher
Screwdrivers—Electric
Screws—Hand
Shingling Brackets

This Large Private Dwelling Was Erected in Hinsdale, Illinois, and Modern Contractors' Equipment Hastened the Work and Kept Down the Cost.

Shovels—Hand
Signs
Soldering Iron
Spades
Steel Tapes
Sledgehammers
Storage Bins—Steel
Surveying Instruments
Tanks—Storage
Tanks—Air Compressor
Tanks—Oil
Timbers
Tractors
Tractors—Crawler
Trenching Machines
Trench Backfiller
Tarpaulins
Tinners' Shears
Tinners' Punches
Timber Grapples
Tire and Battery Box Branding Tool
Tool Carts
Tool Grinders—Hand
Tool Grinders—Power
Tractors
Transits
Transmission—Ford Truck
Tripods—Portable
Trucks—Hand
Truck Trailers
Vises
Wagons—Horse
Wagons—Dump
Wheelbarrows
Winches
Wire and Cable—Electric
Wrecking Bars

WOODWORKERS
- Combination
- Electric Driven Hand Saws
- Bench
- Skid—Mounted
- Gasoline Driven
- Electric Driven
- Routers—Hand and Stair
- Sanders—Electric Bench
- Straight Line Cut-Off Saws
- Tilting Table Cut-Off Saws
- Woodworkers Equipped for All Cuts

DRAFTING ROOM EQUIPMENT AND SUPPLIES
- Art Gum
- Blue Print Machines
- Blue Print Paper
- Boxwood Rules
- Caliper Rules
- Calipers
- Compasses
- Dividers
- Drafting Pencils
- Drafting Room Furniture
- Draftmen's Scales
- Drafting Tables
- Drawing Boards
- Drawing Inks
- Drawing Instruments
- Drawing Paper
- Protractors
- Scribers
- Slide Scale Rules
- Tracing Cloth
- T Squares
- Triangles

For Sources of Supply, See Classified Index, Pages 460 to 496

Heavy Construction Equipment

Adzes
Air Compressors
Anvils
Auto. Dump Wagons
Ball Bearing Sheaves
Bar Benders and Cutters
Adjustable Measuring Batchers
Backfillers
Batch Boxes—Steel
Battery Charging Outfits
Bin Gates
Blasting Accessories
Blocks and Tackle
Blocks—Rope
Blowpipes—Welding and Cutting
Blue Print Machines
Blow Torches
Boilers
Branding Irons
Brick Clamps
Buckets—Clamshell
Buckets—Dragline
Building Material Elevators
Canvas Covers
Canvas Covers—Asphalt Treated
Caissons
Capstans
Capstan Mounted on Wheels
Car Loaders
Chain Blocks
Chain Clamps
Chain Hoists
Clamping Benches
Cofferdams—Steel
Chutes—Gravity
Calculating Machines
Combination Crusher, Loader and Gravel Screener
CONCRETING EQUIPMENT
- Concrete Carts
- Concrete Torches—Gasoline
- Concrete Wall Machines
- Column Clamps
- Column Forms
- Construction Forms
- Curb and Gutter Forms
- Form Clamps
- Distributing Towers
- Masts
- Spouts
- Forms—Metal T Beam Construction
- Forms—T Beam and Metal Lath Ceiling Unit
- Batch Mixers
- Mixers—Continuous
- Mixers—Tilters
- Mixers—Drum
- Mixers—Power Loader
- Mixers—Gravity
- Mixers—Mounted on Motor Trucks
- Mixers—Pavers
- Surfacers
- Wall Machines—Double Monolithic

CONVEYORS
- Apron
- Conveying Machinery
- Gravity Roller
- Cableways
- Portable
- Power Belt
- Power Chain
- Slat

Cove Base Machines—Electric
Crabs
CRANES AND DERRICKS
- Breast
- Crawling Tractor
- Clamshell
- Dragline
- Electric
- Folding
- Foundation
- Gasoline
- Locomotive
- Motor Truck
- Pile Driving
  - Pole
- Portable
- Stiff Leg
- Tower
- Wood
- Wrecking
- Steel

Crushers and Pulverizers
Dredges—Dipper
Dredges—Sand Pump
Dryers, Air—Fan Blast
Dryers—Sand and Gravel
Contractors' Kitchen Equipment
Cook Stoves—Coal
Cook Stoves—Oil
Dirt Scrapers
Disc Grinders
Drag Saws—Power
Drilling Machinery
DRILLS
- Blast Hole
- Core
- Electric
- Hand
- Rock

Electric Generators
Electric Hammers
Elevating Machinery
Elevator Buckets
Elevators—Hand
Elevators—Portable
Excavators
Excavators—Trench Digging
Dump Bodies—Truck
Dump Carts
Dump Wagons
Engines, Steam—Automatic or Throttling
Engines—Gasoline
Engines—Kerosene
FLOODLIGHTS
- Acetylene
- Electric
- Gasoline

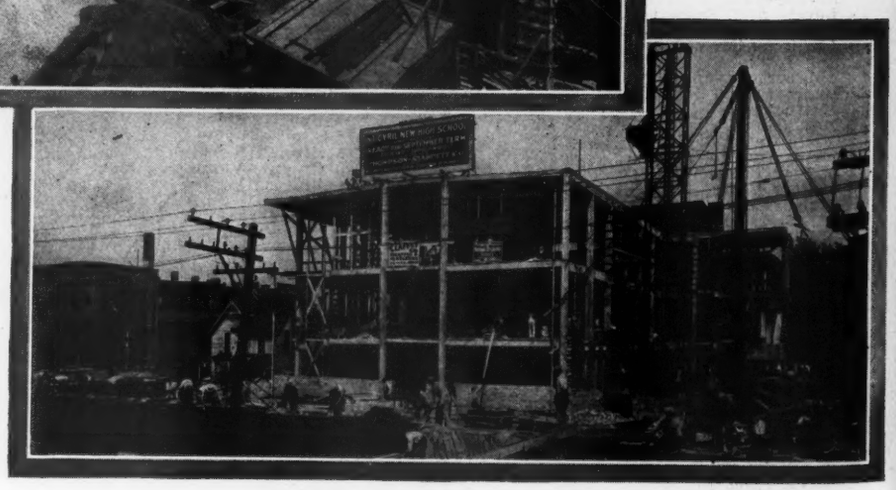
Floor Polishing Machines
Floor Sanders—Power
Floor Surfacers—Power
Gravel Washing Plants
Heaters—Fan Blast
Hoisting and Dumping Buckets
HOISTS
- Bucket
- Chain
- Concrete
- Electric
- Friction—Grab Bucket
- Gasoline
- Gasoline Hoist Derricks
- Log Lifts
- Platform
- Reversible
- Rope
- Skip
- Steam
- Hand

Hydraulic Rams
Insurance—Fire
Jacks—Lifting
Ladder Brackets
Ladders
Level Glasses
Level Sights
Levels—Aluminum
Levels—Iron
Loaders—Car and Wagon
Loaders—Portable
LOCOMOTIVES
- Compressed Air
- Steam
- Gasoline
- Storage Battery

Mortar Mixers—Power
Mortar Mixers—Hand
Mortisers—Electric
Motor Trucks
Motor Truck Stake Irons and Body Braces
Motors—Electric
Motors—Gasoline
Pile Drivers
Pile Driver Hammers—Steam
Piles—Wood
Piles—Concrete
Piling—Interlocking Steel
Poles—Creosoted
PUMPS
- Air Displacement
- Bilge—Automatic Elect
- Centrifugal—Turbine
- Compressed Air
- Diaphragm
- Electric Drive
- Gasoline

Rock Crushers
Rope—Wire
Rope—Manilla
Resaw Machines
Routers
Rope—Transmission
Salamanders
Saws—Electric
Scaffold Brackets
Scaffolds—Steel
SHOVELS
- Gasoline
- Electric
- Hand
- Steam

Sidewalk Forms—Steel
Storage Bins—Steel
Tractors
Transits
Transmission—Ford Truck
Trenching Machines
Trench Backfiller
Well Drilling Machinery
Wheelbarrows
Woodworkers
Wrecking Bars



All the Form Lumber for the Big Reinforced Concrete Building Shown in the Upper Picture Was Cut by Power Saws. Towers, spouts, derricks and hoists show plainly in both pictures and there were many other items of equipment in use which do not show.

For Sources of Supply, See Classified Index, Pages 460 to 496

Equipment for Power Woodworking Shops

Arbor Presses
Arbors—Wood and Iron
Band Knives
Band Saws
Band Saw Machinery
Belting
Belt Tightener
Bench Borer
Bench Carving Machine
Blind Slat Re-Saw Machines
Blind Slat Tenoner
Blind Stile Boring Machines
Blind Stile Mortising and Boring Machines
Blind Wiring Machines
Borers—Vertical
Borers—Horizontal
Boring Machines—Triple Dowel
Brushes, Glue
Chucking Arbor
Clamping Benches
Clamps—Quick Acting Sash
Clamps—Single Motion Door, Blind and Sash
Clutches—Friction
Cutter Heads
Dado Heads
Disc Grinders
Door Clamps
Drills—Electric
Drilling Machinery
Double Door Sticker
Emery Cloth
Gang Edger and Ripper, Hardwood —Power Feed
Garnet Paper
Glue Pots—Electric
Grinders—Tool
Jointer Heads
Jointer Knives

JOINTERS
- Bench
- Glue
- Combination Power and Hand Feed

Knife Grinders
Lathes—Hand Turning
Lathes—Speed
Machine Knives
Mitreing Machines—Foot Power
Mortisers—Hollow Chisel
Motor Drive for Band Saws
Moulders—Inside
Moulders—Outside
Moulding Knives
Panel Raiser—Power Feed
Panel Raiser—Hand Feed
Plane Irons
Planer Knives

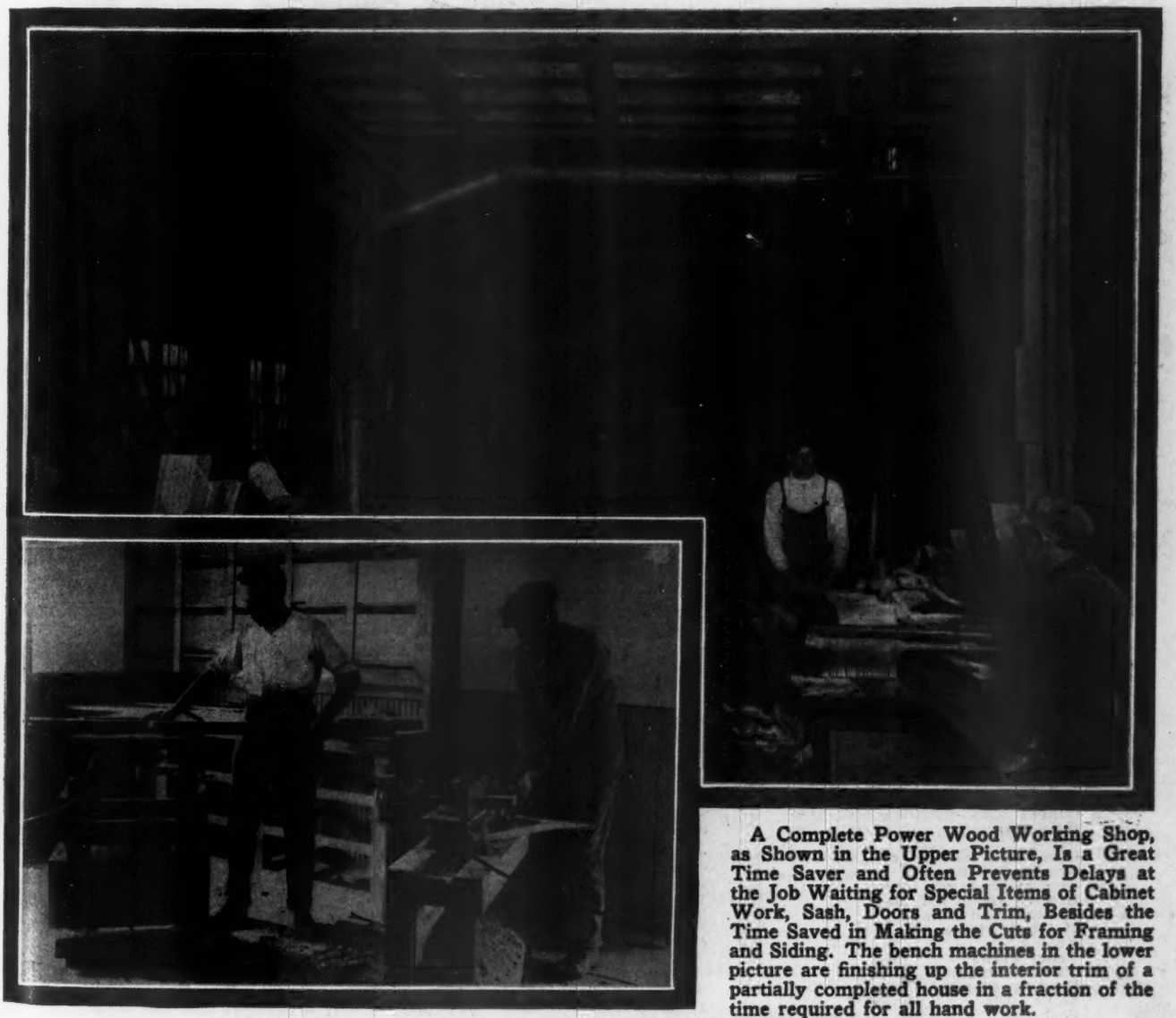
PLANERS
- Matcher and Moulder
- Matcher and Surfacer
- Buzz and Jointer
- Diagonal

Rabbeting and Jointing Machine
Relisher and Wedge Cutter
Relisher and Mortiser
Resaw Machines
Rod and Dowel Machine
Routers—Hand and Stair
Sanders—Electric Bench
Sandpaper
Surface Sanders
Shapers
Shaper Heads

SASH
- Cutters
- Dovetailing Machine
- Jointer and Sander
- Sticking Machines
- Trimmers—Power
- Trimmers—Foot Power

SAWS
- Band
- Bench Mitre and Cross Cut
- Bevel Band
- Bevel Band—Power Feed
- Circular Saws
- Cutting Off or Butting
- Double Bench
- Edging and Ripping
- Gang
- Gangsaw Edgers
- Grooving
- Jig
- Plain
- Re-Saw Machines
- Re-Saw Machines with Jointing Attachment
- Swivel Guide Band
- Scroll
- Scroll—Electric Bench
- Self-Feed Band Rip
- Self-Feed Circular Rip
- Sash and Door Cut-off
- Straight Line Cut-off
- Swing—Direct Drive
- Universal Bench
- Universal
- Wood Frame Double Cut-off
- Wood Frame Rip

Screen Adjuster and Fastener
Screws—Hand
Screwdrivers—Electric
Shafting and Hangers
Shellac Pots
Tenoning Machine
Tool Grinders
Tool Sharpeners
Veneer Presses
Vises
Woodworkers—Combination
(See list under "Builders' Equipment Most Commonly Used")



A Complete Power Wood Working Shop, as Shown in the Upper Picture, Is a Great Time Saver and Often Prevents Delays at the Job Waiting for Special Items of Cabinet Work, Sash, Doors and Trim, Besides the Time Saved in Making the Cuts for Framing and Siding. The bench machines in the lower picture are finishing up the interior trim of a partially completed house in a fraction of the time required for all hand work.

For Sources of Supply, See Classified Index, Pages 460 to 496

Hand Tools

CARPENTERS' TOOLS
- Adzes
- Augers
- Augers—Hollow
- Axes—Broad
- Axes—Hand
- Bevels
- Bevel Gauges
- Bevel Squares
- Bit and Brace
- Braces—Push
- Brad Sets, Magnetic
- Breast Drills
- Branding Iron
- Folding Rules
- Cabinet Scrapers
- Caliper
- Caliper Rules
- Cant Hooks
- Carpenters' Levels
- Carving Tools
- Claw Bars
- Chalk Line
- Chalk Line—Automatic
- Chisels
- Chisels—Hollow Mortising
- Center Bits
- Clamps
- Compasses
- Countersinks
- Corner and Angle Braces

COMBINATION
- Knife and Screwdriver
- Straight Edges
- Squares
- Tool—Rule, Square, Level, Protractor, Pitch-to-Foot and Plumb
- Tool — Inclinometer, Try-Square and Bevel, Protractor

- Dividers
- Drawshaves
- Drills
- Drills—Push
- Drills—Twist
- Expansive Bits
- Files
- Floor Scraper Blades
- Floor Scrapers—Hand
- Gimlets
- Gouges
- Hack Saws

HAMMERS
- Bell Face
- Plain Face
- Octagon Face
- Nickel Plated Adze Eye
- Vanadium
- Tack

- Hand Drills
- Hand Screws and Clamps
- Hatchet Gauges

HATCHETS
- Bench
- Claw
- Lathers
- Shingling

- Mallets, Rubber
- Marking and Mortising Gauges
- Mauls
- Mitre Boxes
- Mitre Clamps
- Mitre Cutters
- Mitre Jacks—Hand
- Mitre Trimmers
- Mitre Squares
- Mitre Cutters—Foot Power
- Mitre Trimmers, Power
- Mitre Cutters—Hand
- Mortise Guages
- Nail Pullers
- Nail Sets
- Oil Cans
- Oil Stones
- Pencil Compasses

PLANES
- Iron
- Smoothing
- Jack
- Jointer
- Mitre
- Oar
- Astragal
- Side Beads
- Center Beads
- Torus Beads
- Cove
- Quarter Round
- Moulding
- Coping
- Dadoes
- Filletsters
- Ogees
- Ogee Quirk and Bead
- Grecian and Reverse Ogees
- Grecian Ovolo and Fillet
- Grecian Ovolo and Bead
- Hollows and Rounds
- Matched Planes
- Nosing
- Panel Plows
- Rabbet Planes
- Reeding Planes
- Snipe Bills
- Sash
- Weather Strip
- Block
- Steel
- Aluminum Top

- Pliers
- Protractors
- Rasps
- Rules—Measuring
- Rules—Spring Joint
- Steel Protractor for Setting Bevels
- Saw Arbors
- Saw Benches
- Saw Clamps
- Saw Filers
- Saw Gauges

SAWS—POWER
- Portable
- Bench
- Electric Hand
- Swing
- Trailer Mounted
- Woodworkers—Portable, Electric Drive
- Woodworkers—Portable, Gasoline Drive

SAWS—HAND
- Cross Cut
- Rip
- Compass
- Drag
- Grooving
- Keyhole
- Gauge for Tenoning
- Combination Saw, Square and Rule

- Stairbuilders
- Saw Sets

Saw Filers—Automatic
- Scratch Gauges

- Screen Tackers
- Screen Wire Stretchers

SCREW DRIVERS
- Electric
- Plain
- Spiral
- Pocket Magazine
- Ratchet

- Spokeshaves
- Steel Square
- Stair Gages
- Steel Tape
- Swages
- Trammels
- Try Square
- Varnish Pots
- Vises
- Weatherstrip Tools
- Wing Compasses

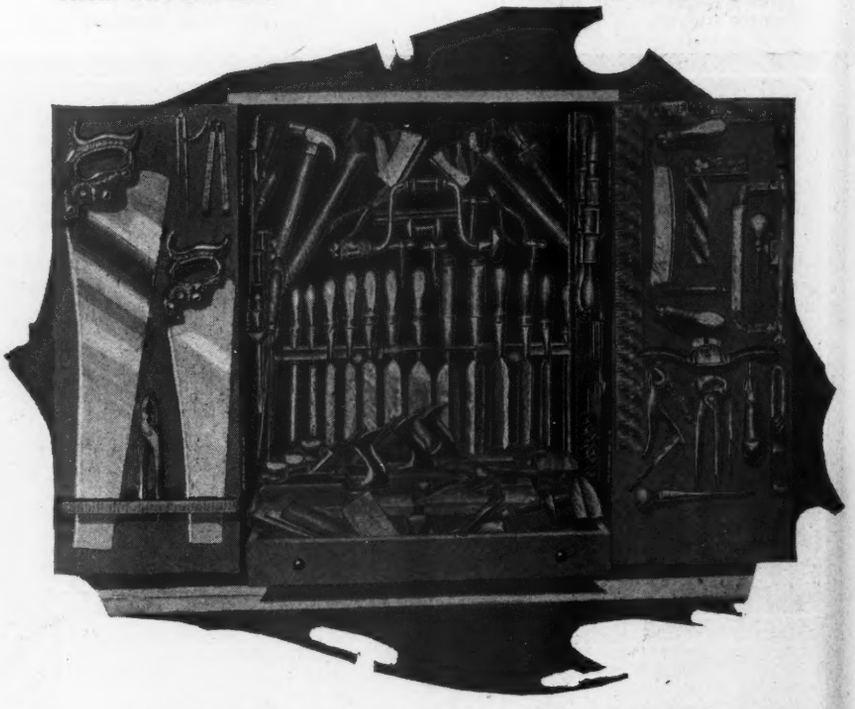
CEMENT FINISHERS' TOOLS
- Cement Markers
- Edgers
- Jointers
- Step Edgers
- Beading Trowels
- Corner Trowels
- Imprint Rollers
- Trowels

ELECTRICIANS' TOOLS
- Braces
- Bits
- Drills
- Knives
- Levels
- Pliers
- Pockets
- Screwdrivers
- Snips
- Soldering Iron
- Tool Bags
- Tool Boxes
- Torches

MASONS' TOOLS
- Brick Clamps
- Masons' Hammers
- Pointing Trowels
- Joiners
- Plumbs
- Levels—Wood
- Levels—Aluminum
- Line Levels
- Lines
- Stone Drills
- Tool Bags
- Trowels

PLASTERERS' TOOLS
- Darbies
- Floats
- Trowels
- Mitreing Rods
- Cork Floats
- Wood Floats
- Paddles
- Angle Paddles
- Hawk and Darby Anglers
- Hawk and Darby Boards
- Hawks
- Brick Joiner
- Tile Markers
- Race Knives

PLUMBERS' TOOLS
- Blow Torches
- Closet Cleaners
- Shave Hooks
- Calking Irons
- Tool Bags
- Bossing Sticks
- Turn Pins
- Dressers
- Ladles
- Tap Borers
- Solder Pots
- Soldering Irons
- Pipe Bending Springs
- Grease, Rosin and Flour Boxes
- Bibb Seat Dressers



There Are Over 80 Tools in This Very Complete Cabinet, Equipping the Carpenter for Almost Any Kind of Work. The more complete the equipment, the greater the convenience and time saving.

(*Continued to page 297, third column.*)

For Sources of Supply, See Classified Index, Pages 460 to 496

Equipment for Concrete Products Plants

Air Glazing Apparatus
Belting, Leather
Belting, Rubber
Bin Gates
Blocks—Rope
Boilers, Steam
Cement Brick Machines
Cement Brick Moulds
Cement Sack Balers
Cement Sack Cleaners
Chain Blocks
Chain Clamps
Chimney Molds
Cistern Covers
Clamp Carriers
Clutches—Friction
Column Bases
Column Molds
Concrete Carts
Concrete Colors
CONCRETE MIXERS FOR PRODUCTS PLANTS
- Batch
- Continuous
- Drum
- Mounted
- On Skids
- Shovel
- Tilter

CONVEYORS
- Apron
- Belt
- Bucket
- Cableways
- Conveying Machinery
- Overhead Track
- Portable
- Power Belt
- Power Slat
- Gravity Roller
- Tracks and Cars

Cranes
Crushers, Rock
Elevating Machinery
Elevator—Portable
Engines, Steam
Engines, Gas
Excavators
Facings, Special
Face Plates, Broken Ashlar
Face Plates, Panel
Form Clamps
Hand Hoists, Chain
Hoists, Bucket
Hoppers, Material
Jack Lifts
Manhole Covers
MOLDS
- Block and Tile Slush
- Brick
- Chimney Block
- Fence Post
- Porch Column
- Light Standard
- Sewer Pipe
- Step

MOLDING MACHINES
- Circular Cell Tile
- Concrete Brick
- Concrete Drain Tile
- Hand Operated
- Interlocking Tile
- One-Piece Block
- Ornamental Concrete
- Power Tampers and Strippers
- Sewer Pipe
- Silo Block
- Two-Piece Block, T Shaped
- Two-Piece Block, L Shaped
- Two-Piece Block, U Shaped
- Two-Piece Anchored Tile

Motors, Electric
Pallets
PLATES
- Face
- Panel
- Dividing

Pumps, Pressure
Reinforcement, Steel Fabric
Roofing Tile Machines
Scrapers, Power Drag
Shafting Hangers
Shafting, Line
Screens, Revolving
Screens, Hand
Screens—Sand and Gravel
Storage Bins
Steam Room Equipment
Shovels—Electric
Shovels—Steam
Striking and Finishing Device
Surfacing Machines
Tampers, Hand
Tampers, Power
Tanks, Oil
Tanks, Water
Transmission Machinery
Trolleys and Trams
Trucks, Hand
Trucks, Motor
Wagons, Dump
Wheelbarrows

PLUMBERS' TOOLS—Cont'd from page 296
- Chipping Knives
- Blow Pipes

WRENCHES
- Monkey
- Pipe
- Chain
- Reversible Ratchet
- Stillson

PIPE FITTERS' TOOLS
- Pipe Cutters
- Pipe Dies
- Pipe Taps
- Pipe Stocks and Dies
- Pipe Tongs
- Pipe Vises
- Pipe Wrenches
- Gas Pliers
- Pipe Threading Machines

MISCELLANEOUS
- Axes
- Clawbars
- Crowbars
- Hatchets
- Ladders
- Mauls
- Paint Scrapers
- Pickaxes
- Post Hole Augers
- Post Hole Augers
- Shingling Gauges
- Shovels
- Slaters' Tools
- Spades
- Tool Grinders
- Tool Sharpeners
- Wheelbarrows
- Wrecking Bars
- Wrecking Tools

The Scene in the Upper Picture Shows Concrete Brick Being Molded and Set on Metal Covered Pallets and Being Trucked Into Steam Curing Rooms on Special Patented Trucks Which Enable One Man to Handle 25,000 Brick Per Day. The Toledo plant shown in the lower picture has a capacity of 6,800 hollow concrete tile per day.

For Sources of Supply, See Classified Index, Pages 460 to 496

Meeting the Demand for Concrete Building Units

By J. D. WILDER

A Typical Plant for Manufacturing One Kind of Concrete Building Tile. This represents practically a standardized factory. The stock of tile is seen in the foreground, back of this the curing chambers, factory and office.

WHEN winter has drawn its last breath and is beating a reluctant retreat in the face of the advancing spring season, to many people spring means putting into execution the plans for a new home which have been developed during the long winter evenings. This phase of the construction industry, home building, throws that industry into high gear as soon as the frost is out of the ground and architects and contractors again resume their yearly pleading for prompt delivery of materials.

Naturally all lines of business engaged in the manufacture and distribution of building materials reflect this increased activity. One type of building material, concrete building units, has jumped into an enormously increased popularity during the last few years, and, as a result, concrete products manufacturers, working to the limit of their capacity, have not been able to meet the demand. The popularity of this material is shown by an increase in production of 800 per cent in four years. The jump from a production of 50,000,000 in 1920 to 462,000,000 block in 1924 has been one of the most remarkable occurrences in the building materials field.

This spring, however, conditions were different. Progressive manufacturers were prepared with stocks of well cured block manufactured during the winter months to carry them over the first rush of orders. In some localities where the demand was particularly heavy these enterprising products men had built up stocks ranging from 75,000 to several hundred thousand block. Such supplies enabled them to fill orders as they came in and at the same time manufacture and cure new block for later use.

In addition to being able to give immediate service, concrete block manufacturers are realizing other advantages from winter operation of their plants. Architects and contractors are desirous of learning all they can about the materials which they specify and use in their work. Winter time, when they have more leisure, affords them an excellent opportunity to visit products plants and see the methods used to manufacture and cure concrete block. The full storage yard always answers their question of an adequate source of supply.

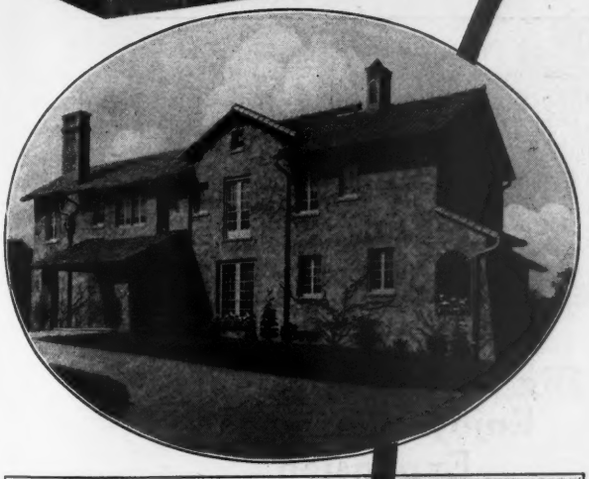
Building a home is one of the most important events in a person's life and naturally he wants it to be the best that he can build. Consequently he gives a great deal of time and thought to the

(*Continued to page 316.*)

Interior of a Plant at Astoria, Ore., Showing the Traveling Conveyor, Operating Both Ways from the Mixer in the Center, and Finished Blocks in the Foreground.

DUNTILE

Is Ushering in a New Era of *ECONOMICAL* Permanent Construction



THIS PAGE and the two that follow contain a message of tremendous importance to the man of broad business outlook—to the man who is seeking a larger business opportunity for himself—in short, to the man who understands the present needs of the building industry and therefore will recognize the great money-making possibilities of being first in his locality to manufacture an all-purpose unit that puts building on a new plane of economy.

DUNTILE Reduces Cost of Finest Permanent Construction to Level of Frame

Think of it. Every type of building, large or small, can be built from foundation to roof with DUNTILE at a cost approximately 30 per cent lower than brick or practically the same as frame construction. The pictures at the left give an idea of the range of uses for which DUNTILE is sold, but only a slight idea, for the fact is that DUNTILE makes possible a wide variety of superior forms of construction suited to ALL building needs.

Think also of these many practical advantages—light weight combined with great strength, exceptional insulating and fire resisting qualities, an easily handled unit with full mortar bed, and accurate dimensions, a wide variety of **standard** sizes that "key" perfectly with all other building materials. When you get the **full** facts concerning these important advantages you will understand why we say that YOUR market for DUNTILE is unlimited.

More than 250 Successful Plants Prove YOUR Opportunity

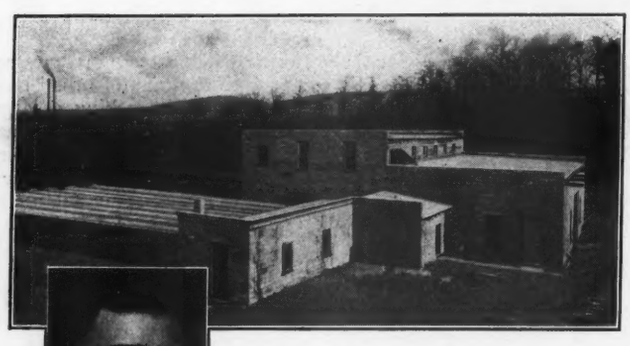
Surely you are interested in the possibility of a manufacturing plant of your own that requires only a moderate outlay of capital yet offers seldom equalled opportunity to do a large volume of business at an extremely long margin of profit. For proof that such a business is within your grasp, turn to the following pages where are shown typical examples of the astonishing success others are achieving in the manufacture of DUNTILE—success YOU can duplicate.

Will YOU Be Among Those to Secure the BIG Financial Benefits ?

See the next two pages before You Answer this question

YOUR Business Future?

Will It Parallel the Manufacturing Independence of these Remarkably Successful Manufacturers of DUNTILE



$3,500 Investment Becomes $30,000 In 1½ Years

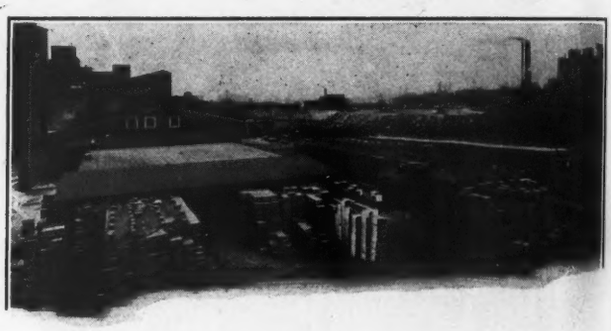
THIS is Mr. Frank A. Lind of the firm of Lind Brothers, Altoona, Pennsylvania, and the splendid big new plant built out of profits made during their first 18 months as makers of DUNTILE. This company invested less than $3,500 in their original DUNTILE plant and undertook to meet unusually keen competitive conditions. Despite these handicaps their investment has grown nearly tenfold and their newly completed plant has a capacity eight times greater than that with which they started.

* * * *

Prominent Business Men Find Greater Opportunity in DUNTILE

THIS gentleman, Geo. D. Fister, of Allentown, Pennsylvania, long has been a leading business man in that city and still is president of a local ice company. Within a year of the time of opening his plant DUNTILE had made long strides toward becoming **the preferred building unit** in Allentown. Men of this calibre—many of them—are attracted to the manufacture of DUNTILE because their business experience and sound judgment enables them to see clearly that this business presents possibilities for immediate profits and steady growth seldom found in any field.

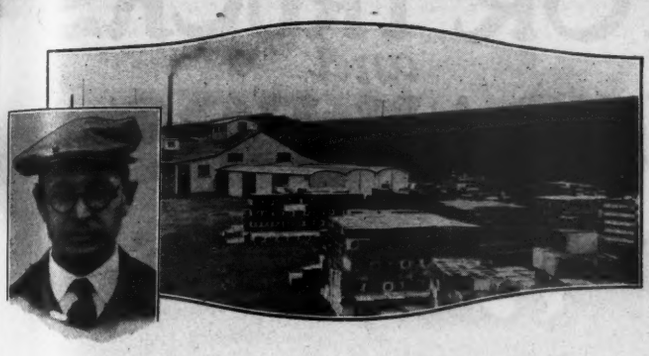
* * * *



Big City Contractors Enjoy Enormous Expansion

MESSRS. Hummel and Hillebrand have been partners for years in one of the most prominent sub-contracting concerns in Toledo. About two years ago they added the making of DUNTILE to their activities with the astonishing result that it almost immediately overshadowed their older business. In fact they expect this year to expand to an extent that will force their complete withdrawal from the contracting field. A number of DUNTILE manufacturers have told us that no other business offers such great possibilities for growth; experiences like this seem to completely prove the truth of this.

If you haven't already done so, be sure to read the preceding page



Authority on Building Stakes His Future on DUNTILE

FOR a number of years Mr. H. C. Carson served as City Engineer for the municipality of Butler, Pennsylvania. In that capacity he was called upon to test and pass judgment on every kind of building material. Hence we feel it an enviable endorsement of DUNTILE that he should choose the making of this unit as his life work. As active head of Klinger-Carson Company, he is causing DUNTILE to forge ahead rapidly to the position of leadership its quality merits.

* * * *

DUNTILE Plant More Than Doubles Contracting Business

MR. Harvey Kaufmann was (and is) an architect. His brothers are in the contracting business in the same city, Saginaw, Michigan. When DUNTILE came to their attention they decided to join forces, using DUNTILE as a means of building up a larger volume of contracting. Their hopes have been more than fulfilled. DUNTILE, they tell us, has caused their contracting business to be brisk even during dull times and constantly enables them to get important jobs that could not be had otherwise. "The economy of DUNTILE," says Mr. Kaufmann, "is the controlling factor in almost every contract".

Does 40% Larger Business than Highest Estimate

MR. Albert Dahl (Ellwood City) is the conservative type of successful business man who looks often and carefully before leaping into a new business venture. Before sacrificing his $30,000 worth of road building equipment he satisfied himself that the volume of business available in DUNTILE would more than warrant such a move. Likewise he set a high mark to aim at for his first year's business. Need we say more than that the business he actually did totalled 40 per cent more than he had even hoped for?

* * * *

Canadian Manufacturer Secures Prize Contracts First Year

THE 500 car garage shown on the first page of this announcement is but one of several extremely large contracts for DUNTILE obtained by the Duntile Company Limited, of Montreal, during their first year of operation. An even better idea of their success is gained, however, from the fact that in this same period they secured the active support of fourteen leading architects and placed on their books 51 substantial contractors. Obviously there can be only one fundamental reason for such excellent progress—a product that can be offered as **the outstanding value** and then makes good every claim made for it.

The information contained in these two pages is the merest fraction of the fund of facts and figures concerning the opportunity that is open to you. If you are interested in duplicating these successes—and certainly you are—simply use the coupon. Do not wait until someone else has taken advantage of the opportunity that today is yours. Investigate.

W.E.DUNN MFG. Co.

415 West 23rd St.
HOLLAND, MICHIGAN

Show me

through your book, "BASIC FACTS," the facts and figures that prove how average ability and some capital win manufacturing independence for those supplying DUNTILE in each community. Also show me how I can manufacture DUNTILE in a plant of my own at a profit of 30% to 60%.

Name .....

St. Address.....

City.....State.....

MOTOR TRUCKS and TRAILERS

Equipment for Transportation

BUYING trucks is not, as it might seem at first glance, a question of buying machinery. It is a question of buying transportation, and that is an entirely different question. A person may select a truck which is as near perfection as any piece of machinery can be, but for the purpose which it is used it may be a very poor unit of transportation.

It is quite generally agreed that the automotive industry, from the manufacturing end at least, has become very well standardized. Any manufacturer who survives the competition of a few years must necessarily turn out a good product for the price it brings. But this fact does not make it possible to select any well known truck and expect to get the greatest and most economical service possible on the work to be done. A truck may be as fine a mechanical unit as it is possible to turn out; it may

This Truck, Hauling Sand from the Pit, Was Carefully Selected for the Work It Was Expected to Do. It is a two-ton model with hydraulic hoist, dump body and pneumatic tires, which makes for quick unloading and good traction even in soft sand.

E. H. SCHWARTZ, *7108 Southwest Ave., St. Louis, Mo.*
Standardizes on

INTERNATIONAL TRUCKS

E. H. SCHWARTZ, ESQ., *of St. Louis*

International Harvester has built motor trucks for 20 years. Mr. Schwartz is a veteran of 20 years' experience in the building supply business. Today they work together—that is, a fleet of International Trucks does the hauling for the Schwartz Material Supply Co.

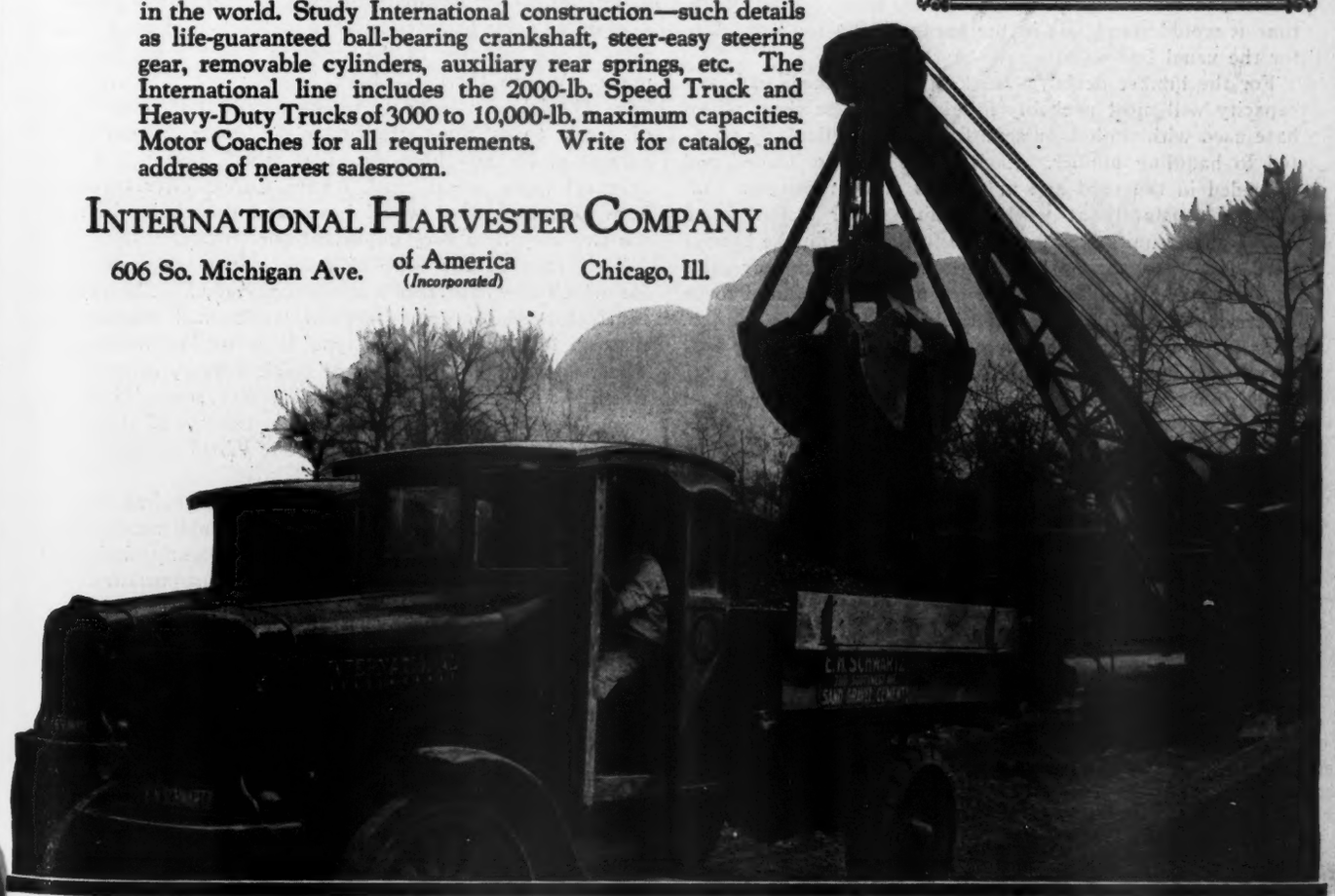
Mr. Schwartz has tried out various kinds of trucks in the past and has now standardized on Internationals, adding new ones as business increases. Nine trucks are now at work, three 5-ton, three 3-ton, two 2-ton, and one 1-ton capacities.

Mr. Schwartz has built a fine reputation for efficiency and service, having quadrupled his business in ten years. His opinion of International Trucks will have weight with building supply dealers and contractors in general.

In the view below are two of the Internationals. Showing also the up-to-date heavy-duty crane which loads 50 tons of sand or gravel an hour and works at that speed for months on end. That sort of efficiency fits in with International standards and has led to standardization on International Trucks.

International Truck owners are served by 111 branch houses, the largest Company-owned motor truck service organization in the world. Study International construction—such details as life-guaranteed ball-bearing crankshaft, steer-easy steering gear, removable cylinders, auxiliary rear springs, etc. The International line includes the 2000-lb. Speed Truck and Heavy-Duty Trucks of 3000 to 10,000-lb. maximum capacities. Motor Coaches for all requirements. Write for catalog, and address of nearest salesroom.

INTERNATIONAL HARVESTER COMPANY
of America
(Incorporated)
606 So. Michigan Ave. Chicago, Ill.



be perfectly suited to one kind of work but for another purpose it may be not only uneconomical but actually an expensive investment. A less expensive truck might serve far more economically.

Before buying transportation equipment, whether it be trucks or trailers, the contractor should make a careful study of the work which it will be called upon to do, and the conditions under which the work will be done. After the requirements have been carefully analyzed he can make an intelligent selection of the equipment which will best meet these requirements.

There are certain conditions, even yet, where horse-drawn wagons will serve more economically than trucks, but such conditions are very rare, and are practically never met by the average contractor. With the constant improvement and adaptation of trucks and trailers the time is not far off when motor equipment will surpass horse equipment under every possible condition.

Here is an Example of What the Contractor Must Consider in the Way of Road Conditions. Railroad yards as well as new subdivisions are often soft and make the going most difficult.

In determining the demands to be made upon the truck and the conditions of operation, there are a number of things to be considered. First of these is the kind of hauling which is to be done. The hauling of heavy bulk materials calls, in general, for a heavy truck with dump body, while for the lumber dealer this would be useless. Bulk material, under ordinary circumstances, can not be economically handled with a light truck. The exception to this rule occurs in cases where bulk material is handled only occasionally and in small quantities, as in the case of the general contractor who does an occasional small concrete job. It would be truly foolish for such needs to purchase a great heavy 10-ton truck with mechanically operated dump body. Most of the time it would stand idle in the garage being too unwieldly for the usual line of duty.

For the lumber dealer, a truck of light to medium heavy capacity will most probably fill the bill. The short wheel base used with trailers or semi-trailers is particularly adapted to handling lumber. Each trailer may be loaded and unloaded in the yard and at the job while the motor unit is kept constantly at work handling other trailer units. These trailer units are also very effective within the lumber yard and often can be handled here by a tractor or mule to good advantage. The same tractor may be found to be of service in hauling trains of trailers to and from the job. This is particularly true where the road conditions or lack of roads make difficult going for the trucks.

This question of road conditions is another most important consideration. In the larger communities it often happens that there is rarely or ever any hauling to be done except over comparatively good streets or roads. Even in the cities it sometimes happens, however, especially in subdivision work where paving has not yet been done, that deep mud, soft sand or other bad traction will be encountered regularly. There is also the question of hauling sand from pits where, at one end of the haul, the truck must pass through and turn in soft sand. For such work there are two possible aids. One is the very broad solid tire or the double rear wheel, the other is the large pneumatic tire which is rapidly gaining such great popularity.

Another point to be considered in the line of road conditions is the question of the space in which turns must be made. Where there is alwys ample room for turning a long wheel base is entirely satisfactory, but in many kinds of work turns must frequently be made in extremely narrow places and here the short wheel base is the only practical type. Most truck manufacturers offer trucks in both long and short wheel bases and the choice between the two may be a very important one.

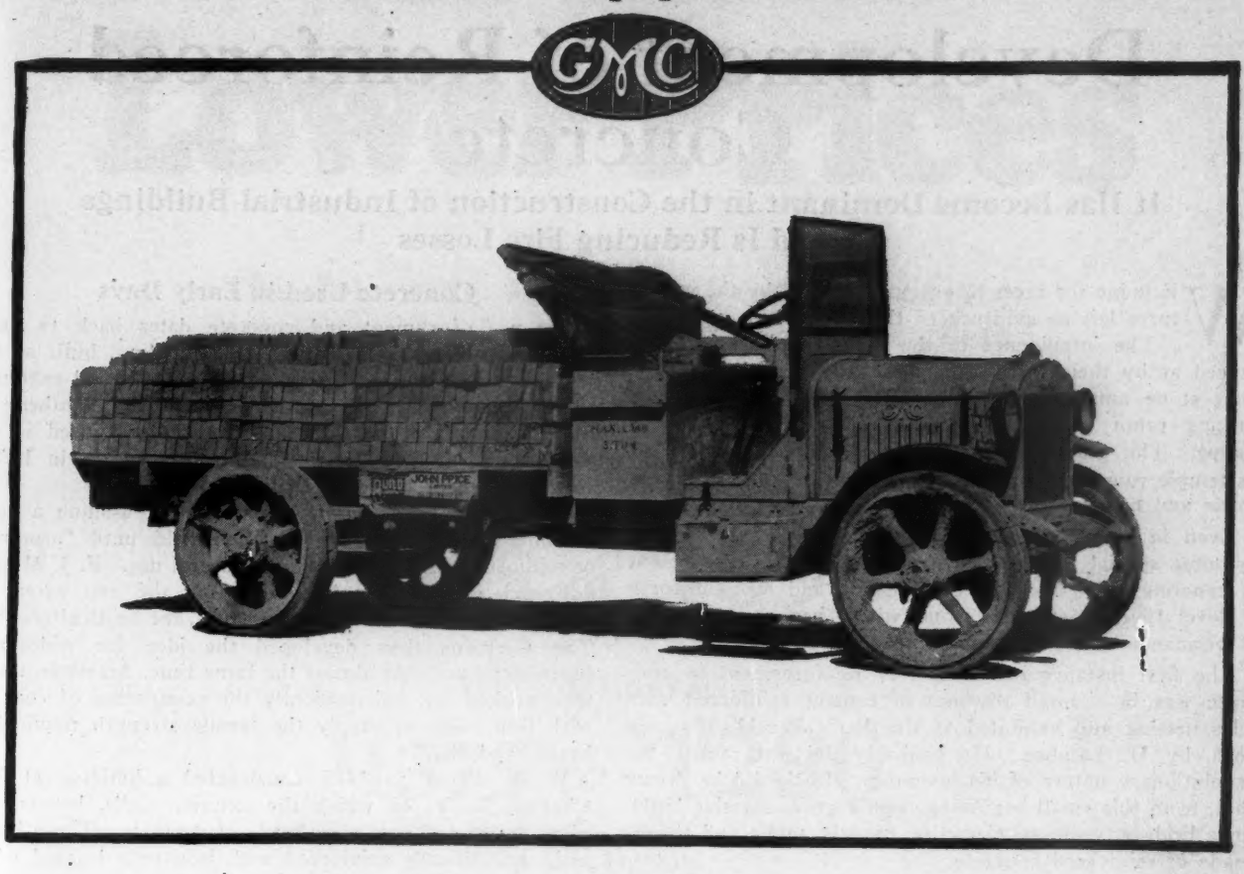
To return to the type of truck, there are many uses for which the light fast truck is unexcelled. The general contractor who operates several trucks will usually find that at least one of this type is a paying investment. There are constant demands of quick delivery of comparative light loads on big jobs and where several jobs are being handled at one time. Such a truck will also serve well to carry the contractor from one job to another where his attention must be divided.

For general contracting work and heavy hauling, as well as for handling lumber, the trailer should receive consideration. The general contractor frequently finds that a trailer will double the capacity of his transportation with only a slight increase in cost. Trailers of the four-wheel type are being used to a very great extent in the hauling of heavy bulk materials. Trains of as many as six trailers are often used for this purpose and it is not uncommon to see the motive power furnished by a tractor.

Great speed of travel is not usually required for this work so the tractor serves economically. But even where time is an important element the tractor may be the best power unit. Tractors are now being built, especially designed for road construction work, which will handle one or more trailers at a most satisfactory speed, and when

(*Continued to page 398.*)

A Handy Little Unit Used Here for Advertising But with a Hand Operated Dump Body Which Fits It for Quick Delivery of Small Loads of Bulk Material as Well as Other Material and Tools Needed in a Hurry.



In the Inventory

Hungry depreciation, which takes big yearly bites out of the value of ordinary trucks, has a very hard time getting its teeth into a GMC.

The name GMC on your trucks will protect your truck investment. It is no ordinary name.

It points to the responsible, permanent parentage behind GMC—a Division of General Motors.

And to rugged stamina that resists wear. All through you will find GMC's constructed of overstrength materials and parts developed by GMC engineers and in General Motors great Research Laboratories. Better trucks simply cannot be built!

But, because of General Motor's vast purchasing power, these superior materials and parts, bought in enormous quantities, add extra value to every GMC without extra cost.

In the inventory of your assets, and out on the job, GMC's will make a better showing. Ask for the new and valuable booklet on motor truck operation and care.

General Motors Trucks

GENERAL MOTORS TRUCK COMPANY
Division of General Motors Corporation
PONTIAC. MICHIGAN

CLIP AND MAIL

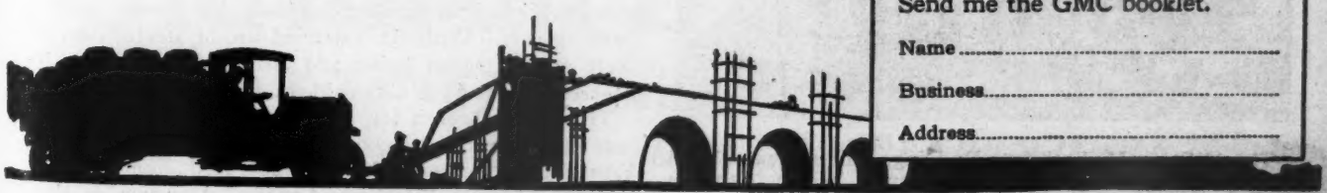
General Motors Truck Co.
Department 9,
Pontiac, Mich.

Send me the GMC booklet.

Name .....

Business .....

Address .....



Development of Reinforced Concrete

It Has Become Dominant in the Construction of Industrial Buildings and Is Reducing Fire Losses

WE judge the races of antiquity largely by the structures left as evidence of their progress.

The intelligence of the mound builders is evidenced as by their earthworks and early British races by their stone ampitheaters or temples. The pyramids are striking proof of the engineering knowledge of ancient Egypt. The glory of ancient Greece is still evident in its temple ruins and of Rome in its forums, amphitheaters, roads and aqueducts.

Even in modern history, we recognize periods marked by some special form of construction. The reinforcement of concrete created a new building art and brought forth a novel type of structure—one which has new elements of permanence, fire resistance and economy.

The first instance of the use of reinforcement in concrete was in a small rowboat of cement reinforced with wire netting and exhibited at the Paris World's Fair, in 1855, by M. Lambot. He probably did not realize the revolutionary nature of his invention. Little did he dream that, from this small beginning, would grow massive buildings, bridges, viaducts, elevators, tunnels, tanks and towers made of reinforced concrete.

The 19-Story Medical Arts Building, Dallas, Texas, is an Example of the Architectural Beauty Which Can Be Achieved with Reinforced Concrete Construction.

Concrete Used in Early Days

The use of cement and concrete dates back to early times and there are structures still standing, built at the beginning of the Christian era, which are splendid examples of concrete work—such as the dome of the Pantheon at Rome. In later times, portland cement was used in the construction of the Thames Tunnel at London, in 1828—portland cement being of British origin.

The use of concrete, however, did not assume a commanding place in the construction field until "armored" or reinforced concrete came into general use. F. J. Monier, a French gardener, in 1865, took out the first patent on reinforced concrete in basins and tubs, for horticultural use. The Germans then developed the idea for widespread commercial use. At almost the same time, American inventors worked out independently the reinforcing of concrete with iron rods, to supply the tensile strength required in beams and slabs.

W. E. Ward, in 1875, constructed a building at Port Chester, N. Y., in which the exterior walls, beams, cornices, tower and roof were made of concrete. These beams were scientifically reinforced with iron rods located where the greatest stress would occur.

The First Concrete Bridge

The first reinforced concrete bridge built in the United States was probably the one constructed by the Ransome & Smith Company at Golden Gate Park, San Francisco, in 1889.

Since that date, this form of bridge construction has come into increasing favor. The all-steel bridge requires constant repainting to protect it from oxidation, but steel imbedded in concrete is protected against this form of depreciation.

For street subways under railroad crossings, reinforced concrete is the ideal form of construction and can be waterproofed with asphalt saturated membrane mopped on with hot asphalt, so as to be impervious to water, or "drip."

In the same way, tunnels and reservoirs of reinforced concrete are successfully waterproofed. A notable example of this is the New York water supply tunnel under the Hudson River. Through this tunnel flows pure water for drinking. The water of the Hudson is tidal, brackish and greatly contaminated. However, the waterproofing of the concrete tunnel absolutely excludes any contamination of the pure drinking water inside it.

Reinforced concrete is also proving most successful in the construction of large dams, viaducts, reservoirs, tanks and towers; also conduit, pipe, culverts, piling, silos, stacks, chimneys, etc.

Industrial building construction, of late years, has turned almost entirely to the use of reinforced concrete. In addition to large factories and warehouses, many public and office buildings are now of this type of construction. Its fire resistant qualities are recognized as pre-eminent and a great degree of permanence is obtained at a very moderate building cost. With the extended use of steel forms, concrete mixers, power hoists and distributing towers, a high degree of efficiency is obtainable on this type of construction.

There have been a few serious fires in completed buildings of the reinforced concrete type—notably, the Thomas Edison Laboratories at West Orange, N. J., and the Quaker Oats Building at Peterboro, Canada. However, it should

Lower Prices

The following substantial reductions are announced in the prices of Graham Brothers Trucks, effective May 15th:

1 Ton Chassis—

$1175 *to* $1095

1½ Ton Chassis—

$1375 *to* $1280

f. o. b. Detroit

(other chassis prices reduced proportionately)

In the first quarter of 1925 Graham Brothers built and sold more 1½ ton trucks than any other manufacturer in the world.

In the 1 ton and 1½ ton fields combined they were second.

Large production and large sales permit low prices!

GRAHAM BROTHERS
Detroit - Evansville - Stockton - Toronto
A DIVISION OF DODGE BROTHERS, INC.

GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

be remembered that there is really no such thing as a material which is "fireproof" and great conflagrations will damage almost any structure. However, the fire insurance companies accept any good type of reinforced concrete construction as at the best risk and at the lowest rate. A steel frame structure may also be a standard risk and take the low rate, but often it fails to comply with all the provisions of the National Building Code, which calls for at least a 4-inch protection over exterior steel members and a 3-inch protection over interior steel members.

Beautiful results, architecturally, have been achieved in many apartments buildings, office buildings and hotels built of reinforced concrete, as in such splendid structures as the Medical Arts Building, Dallas; the U. S. Grant Hotel, San Diego, Cal.; the Bulmer Apartments, Miami, Fla.; the Hide & Leather Building, New York; the Ingalls Building, Cincinnati; the Hotel Traymore, Atlantic City; Drake Hotel, Chicago; Hotel Utah, Salt Lake City, Hotel Blenheim, Atlantic City; the Edgewater Beach Hotel, Chicago; Calgary Herald Building, Calgary, Alta.; Anson Mills Building, El Paso, Texas; Hotel Olmsted, Rochester, Minn.; Somerset Hotel, Chicago, Ill., and many others.

Concrete work may be carried on almost regardless of temperature, providing proper precautions are taken in cold weather. Chemicals may be used in the water which render it non-freezing, straw and manure may be used to protect the green concrete and canvas enclosures are of great assistance. During the winter of 1919-20, a great deal of concrete work was carried on without interruption. The Somerset Hotel, Chicago, was concreted during weather which ranged as low as 10 degrees below zero.

One of the most commendable features of the reinforced type of building construction is that it is rigid, particularly in the monolithic type—one reason for its stanchness and permanence. This is well illustrated by the way reinforced concrete buildings resisted the San Francisco, Yokohama and Tokio earthquakes and fires; 75 per cent of the surviving buildings are of this type of construction.

The choice of reinforced concrete for towering chimneys and stacks shows how engineers regard its strength and permanence. For instance, at Saganoseki, Japan, stands a chimney which is 570 feet high, inside diameter 26 feet 3 inches, built of reinforced concrete by an American construction company four years ago, which has withstood frequent earthquakes and has given entire satisfaction.

Reinforced concrete buildings can be carried to any reasonable height, as shown by the fact that one building of this type in Dallas, Texas, is 19 stories high.

The U. B. Building, recently completed in Dayton, Ohio, is to be even higher—23 stories, 276 feet from first floor level to the top of the building. It is an extremely handsome office building of the reinforced concrete type. The "Scientific American," some months ago, hailed it as the highest reinforced concrete building in the world. Engineers, however, do not think the limit has yet been reached.

Of course, where the ground space is small and very valuable, the obstruction of light and space by the columns is frequently a serious factor and leads to the choice of a steel frame structure. This has been partly overcome by the use of hollow cast iron columns filled with concrete and with at least 2 inches of reinforced concrete around each column. The strength of this column is very high for its diameter.

The "mushroom" type of construction, invented by Mr. C. A. P. Turner, was a radical departure from former methods, in that it eliminated beams and girders in floors and is truly monolithic. There are many other types of construction, the mushroom type being used principally in warehouses and buildings where the light obstruction by columns is not a serious factor.

Many Methods of Reinforcing

New methods of reinforcement are constantly being evolved and continual progress is being made. In the reinforcement of columns, twisted rods, hoops, spirals and angle bars are being used. I-beams are used principally in foundations and floors. Expanded metal, wire mesh, rods, bars and angles are the principal types of reinforcement, but these are combined in many different shapes and ways designed to care for particular stresses and strains. Square bars, round bars and flat bars have been designed with special fins to give extra bond and grip. There are round and square bars which are corrugated; there is corr-mesh

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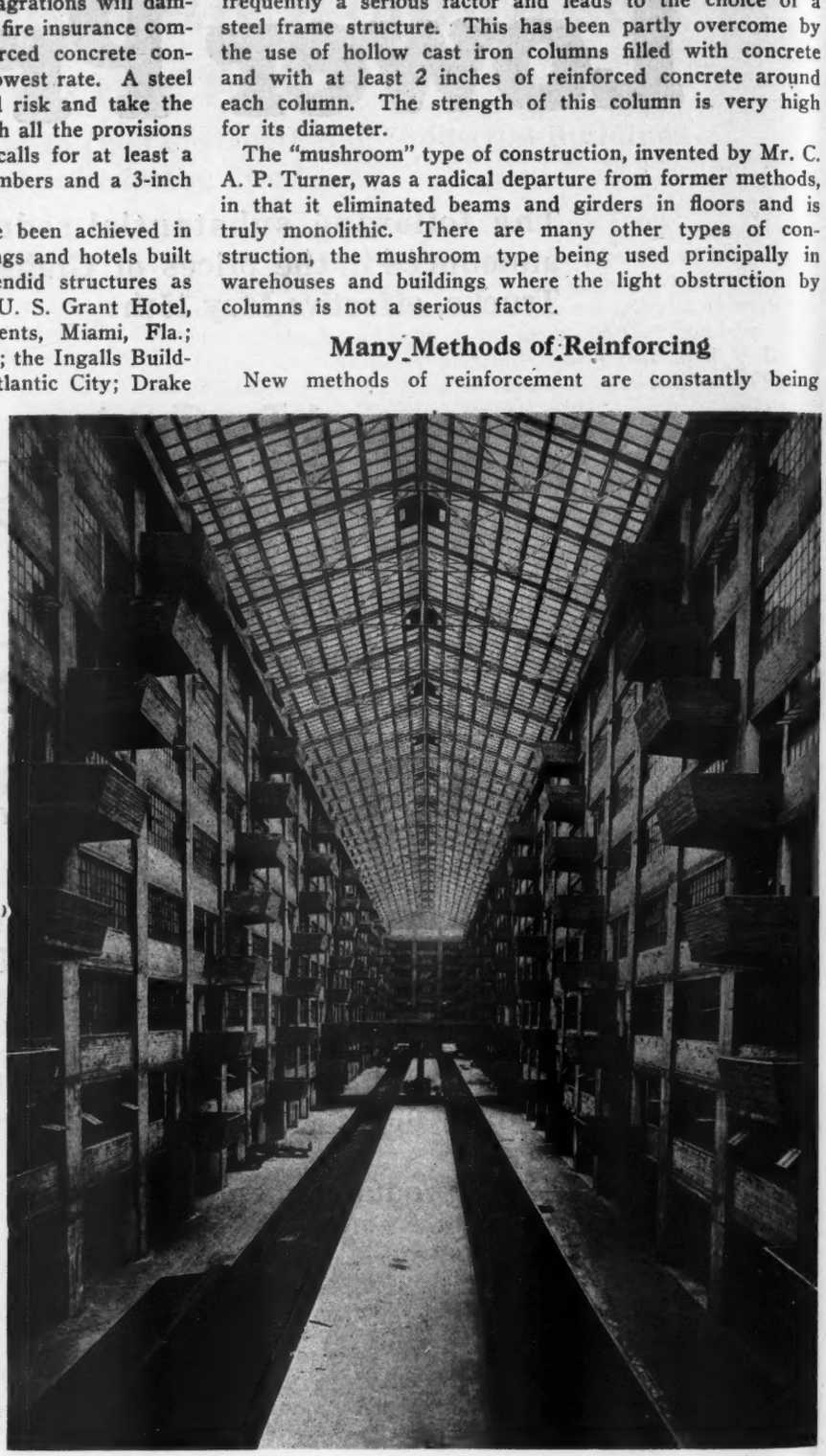


Industrial Building Construction Has Turned Almost Entirely to the Use of Reinforced Concrete, Which Is an Ideal Construction for Factories and Warehouses.

(*Continued from page 308.*)

with integral stiffening ribs; there are round and square bars with lateral ribs; slab spacers, rib chairs, beam chairs, stirrup clips and many devices for convenience and labor savings.

Lumber forms continue to be extensively used in concrete work, but the use of steel forms is gradually increasing. Possibly, some day, standardized construction will allow steel forms to entirely replace wood, but, at the present time, that stage has not been reached. Steel forms are, however, being almost universally used for circular columns and for flaring column heads. They are also being used extensively in floor work, such as floor domes and floor-tyles. While steel forms are, of course, higher in first cost, their ultimate cost is much lower than that of wood, where they can be repeatedly used.

Variety in Outer Finish

The question of the outer finish of concrete work is quite important where the appearance of the building is a factor. A mortar facing makes a desirable finish. One method is to trowel it against the face of the form and hold it in place with a sheet iron plate until the concrete can be poured in behind it. Or the mortar may be troweled against the face of the form and the concrete immediately deposited against it. Another and more common method is to force a spade down the side of the mold pushing back the stones and allowing the mortar to flow in against the mold face.

Where there is discoloration and pitting, it is a good plan to wash the entire face of the concrete with a grout of cement and sand, after the pittings and bubble holes have been troweled over with mortar. A pleasing finish may be obtained by using plaster of Paris in place of the sand.

A rubbed or brushed finish is often selected for many concrete surfaces. One method is to remove the forms before the concrete has set very hard, rubbing the surface with a white fire brick or wooden float in a circular motion. If the concrete is quite "green," a similar appearance may be secured by brushing with brooms or stiff brushes.

Colored crushed stone may be used in a special surface mortar which gives the appearance of cut stone. Special surfaces may be obtained by the use of red or gray granite, sandstone, etc. This method is usually followed by washing with a weak solution of acid.

There are many other effective methods of surfacing. For instance, when the surface of the concrete has set too hard for brushing, it may be tool dressed, as in dressing stone. Grooves are sometimes molded in the face of the concrete with good effect. A wide range of color effects is procurable by introducing dry colors into the cement before the concrete is mixed. Red lead is injurious but the following colors will do no damage: lampblack, Prussian blue, ultramarine blue, yellow ochre, burnt umber and red iron ore, when used in moderate proportions. Concrete surfaces may also be effectively pebble-dashed or painted.

Concrete Means Low Cost

In general, it may be said that the reinforced concrete type of building is lower in both first cost and ultimate cost than other types of construction. The immense Bush Terminal Buildings at South Brooklyn—six, eight and twelve stories in height—were built at an average cost of 20 per cent less than any other Class A fireproof type of building which could have been selected.

It seems safe to say that the "peak" of reinforced building construction has not yet been reached and that the future will continue to see an increase over the present very large volume of construction. No other factor is playing so great a part in the reduction of fire losses, and, from this point of view, reinforced concrete is supreme.

At the twentieth annual convention of the American Concrete Institute, held about two years ago in Chicago, some interesting statements were made relative to the growth of the industry. Mr. B. F. Affleck, president of one of the large cement companies, stated that the production of cement had increased in twenty years from 26,000,000 barrels to 135,000,000 barrels annually.

Growth of the Industry

Twenty years ago, he said, the amount of steel used for reinforcing was insignificant; now, about 1,000,000 tons are used annually. During the last twenty years, the cement used in the United States amounted to 1,560,000,000 barrels.

In order to give an adequate idea of the vastness of this amount, Mr. Affleck drew the attention of his hearers to the fact that only 1,000,000,000 minutes have elapsed since the birth of Christ.

Concrete roads have been constructed in the United States to the extent of 28,000 miles in the last fifteen years and are, in part, responsible for this tremendous cement production.

Mr. Affleck paid a tribute to the cement industry and to the permanent use of concrete in these words:

"Personally, I get a great deal of satisfaction out of the fact that I am in the cement business. Every one in the cement or concrete industry or any of its ramifications can share this feeling. It is based on the idea that of practically all human handiwork, that which is made of concrete is the most durable. It may in truth be said that, with a few negligible exceptions, every yard of concrete which has been mixed since the industry began, is today serving a purpose in building, bridge, dam, power station, road, sidewalk, silo or corn crib, contributing to production, economy, conservation, comfort or pleasure and all of its value remains on the asset side of the balance sheet, proof against fire, decay or other elements and subject to but slight depreciation with the passage of the years."

At Dayton, Ohio, the U. B. Building Is 21 Stories, 276 Feet High and Engineers Say the Limit in Height for Reinforced Concrete Buildings Has Not Been Reached.

The New Home of the American Floor Surfacing Machine Company

At TOLEDO, OHIO

The Largest of its Kind in the World

The Story of the American Universal Floor Surfacing Machine

Prior to the advent of the floor sanding machine, wood floors were surfaced or made smooth by scraping with a steel blade by hand, the workman kneeling on the floor with pads to protect his knees. This method was necessarily slow, hard work, and required skill to do a good job.

This was the state of the art at the time the erection of the Academy of Science of the Leland Stanford University of California was projected. After the contract was placed, the builder discovered that the floor finishing had not been figured in the contract and, with the close margin of profit contemplated, a loss on the carpenter work was likely to result.

A carpenter foreman conceived the idea of building a motor-driven machine to operate on the same principle as board sanding machines then used in planing mills. A crude device was made and worked so successfully that the anticipated loss was turned into handsome profit. The machine was patented, and a company organized to market it.

For several years the machines were built in various jobbing shops in California until 1905 when it was decided to seek better geographical location and Toledo was chosen as the site for their future efforts. The company acquired a small shop on the site of the present plant, and was incorporated under the laws of Ohio. From this small beginning the business, under capable management of Mr. Wm. B. Frey, President, and Mr. Harry H. Wolfe, Vice-President, has been developed into a large and modern plant with branches in New York, Chicago, Pittsburgh, Philadelphia, Detroit, St. Paul, etc., and several foreign countries. The developement of the American Universal Floor Surfacing Machine has kept pace with the growth of the business and has been developed to such a high degree of efficiency that it does as much work in one day as was formerly accomplished by six men working on their knees scraping by hand. It not only effects this saving but does much better work than was possible with the old method of hand-scraping.

The American Universal Floor Surfacing Machine is a compact device mounted on three wheels so as to travel over irregular surfaces and is handled much in the same manner as a lawn mower, except that little effort is required on the part of the operator, as the work is done by a powerful electric motor which drives a rotating drum at a high rate of speed.

The drum, which is 12 inches long, and is covered with an abrasive paper similar to sand paper and known as garnet paper, cuts off the surface of the wood floor rapidly, purely by the so-called grinding or sanding action, there being no knives or metallic cutters of any kind employed. The garnet paper covering can be replaced quickly when worn and has the advantage of being able to cut down nails in old floors right with the wood. It is remarkable how the appearance of old floors can be enhanced, by simply cutting off the paint or varnish together with the top surface of dirty or stained wood, leaving the floor boards so clean as to be mistaken for new flooring. See this company's advertisement on the next page.

Why Pay Six Men For One Man's Job

Every contractor without an American Universal Floor Surfacing Machine is increasing his payroll by six men every day that he pays for scraping floors by hand. Think what it means to your payroll over a period of a year, and what it would mean in profits over the same year, if you owned an

American Universal
FLOOR SURFACING MACHINE

Not Only New Buildings But Old Buildings

must have their floors resurfaced and put in good shape. The increased amount of work in resurfacing old floors in old buildings and homes would add big. extra profits to your contracting business.

YOU ARE THE LOGICAL MAN TO HANDLE THIS BUSINESS

Contractors and builders find the "American Universal" method of floor surfacing a profitable side line to keep the money rolling in the year 'round, besides saving the wages of six men on all of their own work. Send a postal card, write or fill out coupon today and ask for particulars and other valuable information which we will furnish without any obligation on your part whatever.

The American Floor Surfacing Machine Co.
515 So. St. Clair Street, TOLEDO, OHIO

CUT OUT AND MAIL THIS COUPON TODAY

The American Floor Surfacing Machine Co., 515 South St. Clair Street, Toledo, Ohio

Please send me without any obligation on my part full information about the "American Universal" Floor Surfacing Machine.

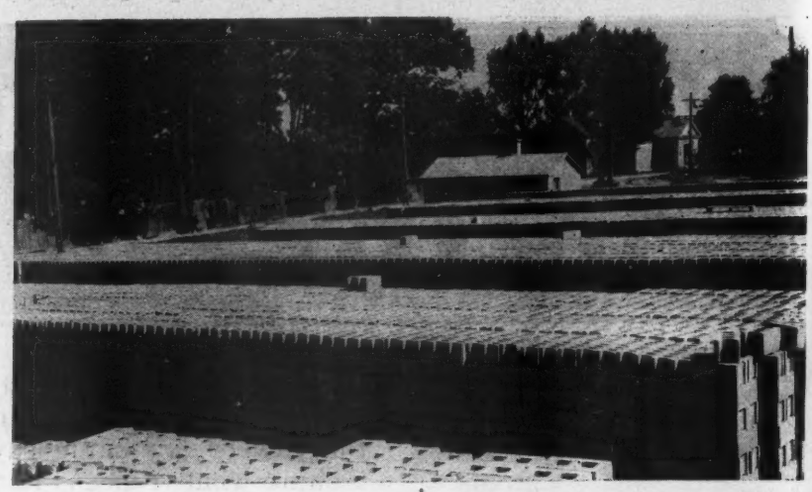
☐ I am a building contractor.
☐ I am interested in becoming a floor surfacing contractor.

Name.....
Street.....
City.....
State.....

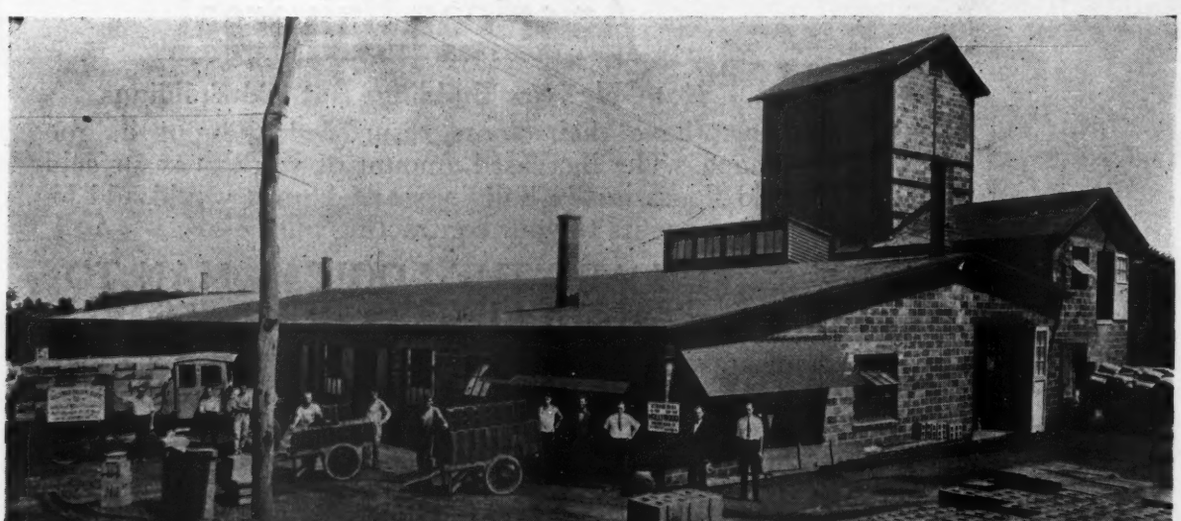
(*Continued from page 298.*)

selection of the materials from which it will be constructed. Enterprising products manufacturers, working on the theory of "seeing is believing," are taking the prospective home builder to the plant in the winter and explaining the process of manufacture.

The desirable qualities of beauty, permanence, fire safety and low maintenance costs are combined in concrete block. Their initial cost is such as to bring them within the means of all home builders. In view of the increasing demand for these building units building material supply dealers and contractors can advantageously make a connection with some one of the manufacturers, thus assuring them of an adequate supply and at the same time aiding the manufacturer to gauge his production so that adequate supplies may be maintained.



Ready for the Rush of the Building Season. This yard is well stocked with block accumulated during the winter in anticipation of the greatly increased demand which comes with spring building activity.



Plant of the Hollywood Building Block Company, at Allentown, Pa., Which Turns Out a Large Annual Volume of This Popular Material to Meet the Constantly Increasing Demand for Cinder Block Construction.

Rear End of the Plant of the Maryland Concrete Corporation, Showing the Curing Tunnels and the Stock Yard. At the beginning of the building season this yard is filled to capacity with the product made during the winter, the annual output is 60,000,000 pounds of concrete block and tile.

"SPA" Certified and Guaranteed

GRADE-MARKED and trade-marked southern pine lumber and timber, certified by the manufacturer and guaranteed as to quality by the official inspection service of the Southern Pine Association, finally is an accomplished fact. Definite action incident to institution of grade-marking as an official activity of the association and a regular authorized practice of its subscriber mills, was consummated at the tenth annual meeting of the association, held recently in New Orleans.

The Southern Pine Association, which initiated the movement at its annual meeting in New Orleans in March, 1922, is credited with being the first organization of lumber manufacturers in the world to put grade-marking into operation. This action is regarded as a distinctly notable achievement.

Grade-marking became effective in subscriber mills on April 1, 1925, and probably before this article is published, officially grade-marked and certified "S P A" lumber and timber will be available to the builders in the retail yards throughout the territory where southern pine is marketed.

Several of the mills, prior to the convention, had secured the official "S P A" grade marking stamps and immediately started branding their output and after adjournment of the convention, many other subscribers ordered the stamps to put the practice into operation at their plants immediately. In fact, a few of the mills have already received orders for and shipped "S P A" grade-marked and trade-marked Southern pine to customers in certain parts of the country.

Long advocated by architects, contractors, engineers, retail dealers and lumber users, this action of the Southern Pine Association undoubtedly will be hailed with much gratification by all the professions and trades connected with the country's great building industry, for this decision is expected to eliminate much of the trouble, worry and unfair competition that these interests have experienced in the past, because of the absence of grade marks on lumber and timber. Likewise the Association's innovation, pronounced one of the most beneficial in the history of the industry, will prove highly pleasing to the general public, to every buyer of lumber, for it is designed to protect them against fraud, due to "grade juggling" and "grade raising" in the sale of lumber.

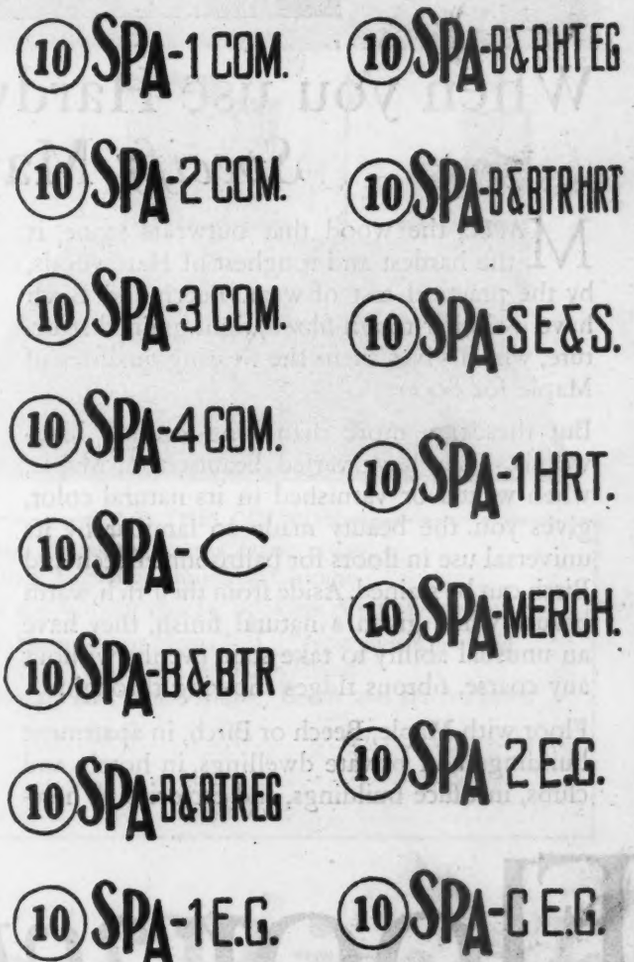
Grade-marking of lumber, supported by an authoritative, official inspection service, such as that of the Southern Pine Association, with identification of the producer, has been recommended and endorsed by hundreds of leading architects, contractors and retailers, and by many of their associations. It was included as one of the most important features of the National Lumber Standardization Program and the scores of organizations connected with the building industries, trades and professions which have endorsed that program have given official approval to grade-marking as one of the major factors in lumber standardization.

Under the plan put into effect by the Southern Pine Association, grade-marking and trade-marking means that it now is possible to buy certified southern pine of guaranteed quality, because the grade brand is backed up by the association's official inspection service as being in accord with the standard specifications for southern yellow pine.

On the end of each piece of lumber or timber produced by a subscriber mill to the association there will be plainly marked a number within a circle, which identifies the mill producing the lumber, the letters "S P A" as the official symbol of the association and the grade—for example: "B & BTR" for B and Better, or "No. 1 COM" for No. 1 Common, whatever the grade may be.

The circle and the association symbol, "S P A," have been copyrighted and only association subscriber mills can lawfully use this form of grade-mark. The stamps and dies and mill numbers for grade-marking and trade-marking under the Southern Pine Association's guarantee, must be secured from the association, and only subscriber mills can be authorized to use this "S P A" brand, for the reason that only subscriber mills receive the association's official inspection service, by which the integrity of the association's standard grades for southern yellow pine are maintained.

The branding for the present probably will be done chiefly with hand stamps, although a machine for the grade-marking has been perfected which does the work satisfactorily and economically and some of the mills will probably employ machines in their plants to do this work. Foreseen delay, however, in securing and installing ma-



Official Grade-marks of the Southern Pine Association. The number in the circle indicates the producing mill, SPA is the official symbol of the association, the other letters indicate the grade of the lumber.

When you use Hardwood Floors *Specify* Maple, Beech and Birch

MAPLE, the wood that outwears stone, is the hardest and toughest of Hardwoods, by the practical test of wear. Beech and Birch have a similar tough-fibred, tight-grained structure, which gives them the wearing qualities of Maple for floors.

But these are more than long-wearing hardwoods. They have varied beauty, too. Maple, when waxed or varnished in its natural color, gives you the beauty made so familiar by its universal use in floors for ballrooms. Beech and Birch can be stained. Aside from their rich, warm beauty when given a natural finish, they have an unusual ability to take stain evenly, without any coarse, fibrous ridges showing through.

Floor with Maple, Beech or Birch, in apartment buildings and private dwellings, in hotels and clubs, in office buildings, and factories. Wherever wear is essential or beauty a factor, Maple, Beech or Birch will prove to be the flooring to use.

You can get a wealth of interesting information on these three floors. Write to the **MFMA** Library for the following in particular, and any one or all will be sent without charge, on request:

"Color Harmony in Floors"
"The Floors for Your Home"
"New Floors for Old"
"How to Lay and Finish Maple, Beech and Birch Floors"

Maple Flooring Manufacturers Association
1053 Stock Exchange Building, *Chicago*

Guaranteed Floorings

The letters **MFMA** on Maple, Beech or Birch flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve every particle of these remarkable woods. This trade-mark is for your protection. Look for it on the flooring you buy. **MFMA**

Floor *with* Maple

New Floors—
make the whole home new!

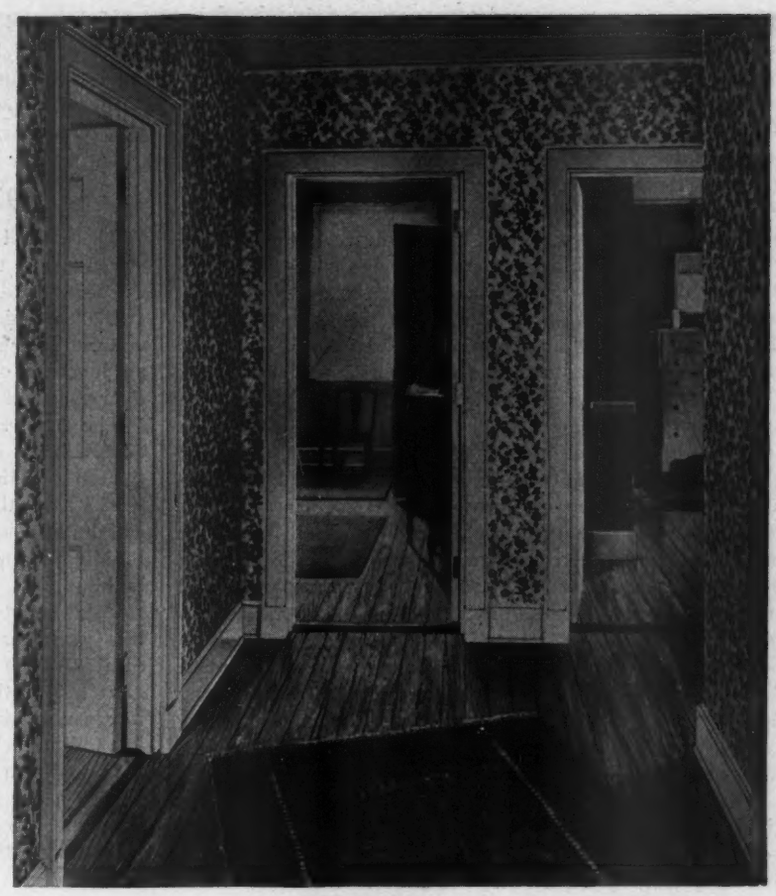
Try this test: Cut out the new floor shown to the right, and lay it over the old floor in the picture. What a difference!

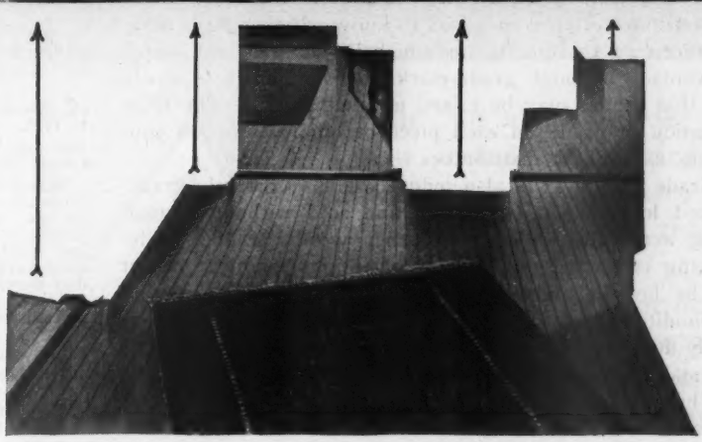
HARDWOOD floors can be had for no more than the cost of new carpets. And what a difference they make in any room! The cheerful and airy beauty of Maple—like "captive sunlight"—or the warmer tone of natural Beech and Birch, will refresh and renew any room in the home.

Beech and Birch floors are also easily stained, and offer you all the possibilities of color harmony. You can lay these floorings almost as easily as you lay a carpet. No need to disturb baseboards or doors. And once they are laid, their beauty is permanent. They make the housework so much easier, for dust can be instantly removed from their smooth, waxed or varnished surface—much easier than sweeping carpets or mopping linoleum.

Send Coupon for Free Facts

New floors for no more than the cost of new carpets are made possible by the special 3/8-inch thickness of Maple, Beech and Birch floorings. Let us tell you the full story of beauty, cleanliness, color harmony, labor saving and economy, in four interesting little publications. Just sign and send the coupon, and send it now.





SEND THIS COUPON

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1053 Stock Exchange Building, Chicago

Please send me without charge, booklets checked below:

☐ *"Color Harmony in Floors"* ☐ *"New Floors for Old"*
☐ *"The Floors for Your Home"*
☐ *"How to Lay and Finish Maple, Beech and Birch Floors"*

Signed .....
Address .....
City ..... State.....

Beech *or* Birch

chines, induced the Southern Pine Association to institute grade-marking at once with hand stamps. Later on these may be replaced by machines in many of the mills.

Grade-marking under the Southern Pine Association's plans means protection to the manufacturer who puts his best skill into his product, because his identity stays with his lumber through to the ultimate consumer and his certified quality product is backed up by the guarantee of the Association's inspection service and grades. It means protection to the honest lumber distributor against unfair competition of dealers who juggle and raise the grades. Likewise it means protection to the contractor against similar unfair competition by unscrupulous builders, and it means protection for the clients of the architects and contractors.

The association's grade-marking plan conforms to the recommendations adopted by the National Standardization Conference on this subject.

The grade-marking principle has been endorsed by practically all of the larger organizations interested in the manufacture and use of lumber. In addition the Southern Pine Association has received endorsements of grade-marking from practically all of the large railroad companies and innumerable letters from individual consumers and members of the building trades and professions.

Secretary Hoover endorses grade-marking of lumber.

"There is no reason why conscientious grade-marking of lumber should not be as successful as the grade-marking of other products manufactured on the basis of different qualities," says Secretary Hoover. "The grade-marking of lumber seems to be particularly important because, unlike any other articles the quality of which can be analyzed, the grading of lumber largely depends on judgment founded upon long experience. It is therefore evident that the consumer often is at a loss to know whether he is actually receiving the quality for which he has paid and which he wants. Without grade-marks on lumber it is easily seen that grades may be mixed unintentionally. The plain indication of grade on each piece of lumber protects consumers as well as distributors.

"Grade-marking will also reduce waste. Correctly grade-marked lumber can be bought and sold without necessitating actual inspection. In other words, if the grade-marking is carried out in a conscientious manner, lumber will be bought and sold unseen, as wheat or any other commodity the various qualities of which have been definitely determined. This will reduce the cost of distribution and stabilize lumber conditions.

"Through grade-marking practices the public will be educated in the various grades of lumber."

✣

Will Grade Mark Hemlock

OFFICIALS of the Northern Hemlock & Hardwood Manufacturers' Association have taken steps to put into effect branding of an official association grade mark on every hemlock board manufactured by members in Wisconsin and Michigan. This will make it possible for the home builder to tell just what quality of lumber is being used in his building. At a special meeting of the lumbermen in this city the manufacturers decided unanimously to adopt this plan for the protection of consumers.

Heretofore, it has been considered impossible to mark each board but a special committee which has been working on these plans for some time, has now evolved a successful method. The plan was presented to a large gathering of Milwaukee architects, lumbermen and contractors, and heartily endorsed by them as a great forward step.

Wisconsin-Michigan branded hemlock lumber will be available in the markets as soon as the necessary equipment can be installed at the mills. The association will issue a license to each mill which has competent lumber inspectors. The expert inspectors of the association will constantly check up on local shipments. The brand will also guarantee full width and thickness of boards and timbers under "American Lumber Standards" as endorsed by Secretary Hoover.

✣

1925 Shows Building Gain

THE April volume of building contracts was the largest monthly total on record, according to F. W. Dodge Corporation. Contracts awarded last month in 36 states (which include about seven-eighths of the total construction volume of the country) amount to $546,970,700. This was an increase of 14 per cent over March and 13 per cent over April of last year.

The April record included the following important items: $256,414,300, or 47 per cent of all construction, for residential buildings; $95,432,400, or 17 per cent, for public works and utilities; $63,968,900, or 12 per cent, for commercial buildings; $46,567,900, or nine per cent, for industrial buildings; and $33,154,600, or six per cent, for educational buildings.

Total construction started during the first four months of this year has amounted to $1,623,540,000, compared with $1,515,043,200 for the first four months of last year. The gain is a little over seven per cent. Of the $108,000,000 increase to date this year, $52,000,000 represents the gain in public works and utilities projects.

In addition to the big gains in actual work started there is also a big gain in prospective work. Contemplated new projects reported in April amounted to $760,657,600, an increase of 25 per cent over the amount reported in April of last year.

✣

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of AMERICAN BUILDER, published monthly at Chicago, Ill., for April 1, 1925.

State of Illinois } ss.
County of Cook }

Before me, a notary public in and for the state and county aforesaid, personally appeared E. L. Hatfield, who, having been duly sworn according to law, deposes and says that he is the general manager of the AMERICAN BUILDER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher—American Builder Company, Chicago, Ill.
Editor—Wm. A. Radford, Chicago, Ill.
Managing Editor—Bernard L. Johnson, Chicago, Ill.
Business Manager—E. L. Hatfield, Chicago, Ill.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

Wm. A. Radford, Chicago, Ill.; H. M. Radford, Chicago, Ill.; Roland D. Radford, Chicago, Ill.; Wm. A. Radford, Jr., Chicago, Ill.; E. L. Hatfield, Chicago, Ill.; B. L. Johnson, Chicago, Ill.; G. W. Ashby, Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state): None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct in the said stock, bonds, or other securities than as so stated by him.

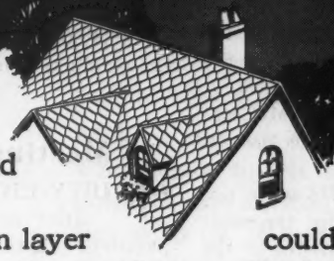
5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date of above is. (This information is required from daily publications only.)

E. L. HATFIELD,
Business Manager.

Sworn to and subscribed before me this 26th day of March, 1925.
ANDREW JOHN NAUMANN.

(My commission expires Oct. 23, 1925.)

Reroofing with Eternit Shingles -PROFITABLE BUSINESS- easy to get



ETERNIT Asbestos Shingles will boost your reroofing business because both the proposition and the product are *right*.

Built-up construction—layer on layer of cement-reinforced asbestos fibre—gives Eternit Shingles unusual resiliency for rigid asbestos shingles. This means quicker, better work with less breakage—big points in reroofing work. And Eternit roofs are wear-proof, water-proof, fire-proof and so good-looking that "one job sells another!"

As an additional lever in getting sales, you have the simplest, most workable *monthly-payment plan* you ever saw. It lets you get your "go ahead" order *right now* instead of waiting until your prospect gets his money saved up. It lands job after job that you could not get on any other basis.

National advertising is pushing Eternit. Our exclusive dealer policy assures you protection. Our prices are hammered down so you can get business on these quality shingles even against substitute roofing competition. Right now, before it is too late, become the "Eternit Shingle Man" in your community. We'll show you how and help you do it. Write us today for the selling plan that means real money to you.

Ask about Eternit Asbestos Building Lumber—the same materials made up in sheet form.

AMERICAN INSULATION CO.
Roberts Avenue and Stokley Street, Philadelphia, Pa.

Eternit
ASBESTOS SHINGLES
Make your first roof last

Free Letterheads Offered

A SUPPLY of 200 or more 8½ by 11 letterheads, printed in one color, may be obtained free and without obligation by any plastering contractor who is interested in co-operating with the advertising campaign on Better Plastering, now being carried on in a number of magazines of national circulation. These letterheads may be secured by merely writing to the Milwaukee Corrugating Company, Dept. A-B, 36th Avenue and Burnham St., Milwaukee, Wis.

As members of the National Council for Better Plastering the company is adopting this method of co-operating in the campaign. At the foot of these letterheads provision is made for alternate quotations involving metal lath in the plastering contract. This appears under the line "National Campaign for Better Plastering." Requests already received by the company indicate that this service is much appreciated by plastering contractors.

✣

Waste Prevention Prize Awards

IN CONNECTION with the award of $2,000 in prizes in the National Lumber Manufacturers' Association Waste Prevention contest, the Utilization and Waste Prevention Committee authorizes the following comment:

The committee, this year, awarded only two prizes—the first and second. The remainder of the thirty-eight entries did not, in the opinion of the committee, qualify for prizes because, while their proposals had considerable merit, they were lacking in sufficiently general application, or they would not yield a sufficiently large saving, or they were not worked out far enough to be considered finished propositions.

The first prize of $1,000 was awarded to D. F. Denham, Laurel, Miss., for the Denham Gang Guide, a device for holding cants straight while they are being sawed in the gang-saw.

The second prize of $500 was awarded Edward McCluskey, Cloquet, Minn., for a log setting retarder for use on sawmill carriages with steam set works.

There were 267 entries, of which number 202 were not within the intent of the competition, because, for the most part, they simply called attention to existing wastes in the lumber industry without proposing concrete remedies.

In a second group the committee placed twenty-seven entries, submitted mostly by men employed in sawmills or logging camps, that were not definite as to their suggestions or that dealt with matters generally known in the industry, or were not developed to the point of usefulness.

The prize-winners were finally selected from the remaining group of thirty-eight entrants, all of whom seemed to comply with the general conditions of the contest. Most of their entries have merit.

The committee wishes to express its gratitude to all the contestants, for even some of those who failed to win prizes have undoubtedly contributed to the improvement of the lumber manufacturing industry, and many of them have devoted much time and thought to ideas which they had no means of knowing were not original with them. That so many persons outside the industry are attracted by its problems is doubtless an indication of a gratifying growing popular interest in the general problem of a future supply of forest products.

✣

New Chain Belt Co. Representative

THE Chain Belt Company, Milwaukee, manufacturers of Rex mixers, conveyors and elevating machinery, announce the appointment of Moriarity Bros. of 208 Knapp Street as their new representatives in Toledo, Ohio. The Moriarity Bros. have had a long and varied experience in construction equipment and are to carry a full line of Rex mixers and pavers in stock.

Recruiting for Building Trades

THE National Association of Building Trades Employers is calling attention to the fact that within the next few weeks thousands of boys and young men will be graduated from the public schools of this country and enter various kinds of employment. Many of these may get into some industry for which they are temperamentally unfitted simply because their attention has not been directed to the kind of work for which they are fitted. By calling the attention of these boys to the building trades and showing them the advantages of this employment the industry can be assured of a constant supply of skilled labor.

To assist local building associations, the National Association has prepared an address entitled "Choosing a Profession," which interested associations or persons can secure and use in taking the story of the building trades to the schools by arranging to address the boys of the graduating classes.

✣

Plate Glass Production Record

ALL records for the production of plate glass in the United States were broken during March when the total output reached 9,773,957 square feet. According to P. A. Hughes, secretary of the Plate Glass Manufacturers of America, the end of the year 1925 will see the establishment of a new twelve months' production record for the manufacturers of plate glass in this country.

"Based on the known demand and the production of plate glass so far this year, it seems reasonable," says Mr. Hughes, "to estimate that the total out-put for the year will be between 105,000,000 and 110,000,000 square feet—enough plate glass to lay a crystal roof over a ranch of 2,500 acres. This will exceed the production of 1924 by from 14,000,000 to 19,000,000 square feet, and it will double the production for the year 1921."

✣

Meetings Boost Installment Plan

"FIFTY-EIGHT meetings have been hold in principal cities to discuss in detail the installment plan for painting," reports the Save the Surface News Bureau.

"While there has been considerable opposition in certain cities before the meetings were held, after the plan had been thoroughly explained to the trade, 99 per cent of those attending the meetings have gone away not only satisfied that the plan was practical and beneficial, but enthusiastic over its possibilities."

✣

100 Per Cent Safety Record

A 100 per cent record for industrial safety was achieved in April by the Universal Portland Cement Co. All its mills, located in various sections of the country, operated during April without having a single employe lose any time on account of accidents.

"Thousands of workers employed, manufacturing over five million sacks of cement last month and with operations speeded up to meet the heavy demands of spring construction without the occurrence of any accident, is a gratifying result of years of safety education," declared B. F. Affleck, president of the company. "Cement manufacture, in common with many other industries, is a hazardous occupation unless constant care is exercised by both company and employes."

"The month of May marks the twenty-fifth anniversary of the organization of the Universal Portland Cement Co. We believe there is no feature of this 'birthday' observance more gratifying than the ability publicly to announce this 100 per cent record of safety in industry."

Seven pages in this issue are used by Rankin Clients

On the 18th Floor of the New Tribune Tower our Chicago offices are located. We shall be glad to meet with you in our offices or yours.

From long experience in handling the advertising of businesses selling to builders, the Wm. H. Rankin Company has learned the value of the AMERICAN BUILDER.

Not merely in this issue, but in practically every issue of the year, Rankin clients use this publication—with good results which verify our judgment in recommending it for such advertisers as Maple Flooring Manufacturers Association, Wasmuth-Endicott Company and Algoma Panel Company.

Resultful advertising must always be a combination of two factors—or more rightly three, the third being, of course, a worthy product. No matter how well advertising may be prepared, it cannot function unless it reaches a receptive audience. For that reason we devote our efforts, first, to the preparation of a selling message which tells and sells effectively—and, second, to the selection of publications which can carry our message to people who will really buy.

Makers and advertisers of building materials—who desire to get results from their advertising dollars—are invited to discuss the profit possibilities with us. We are pleased to furnish, as references, the Rankin Clients who are using the seven pages in this issue of AMERICAN BUILDER.

WM. H.
RANKIN
COMPANY *Advertising*

Tribune Tower • Chicago

Telephone Randolph 6600

NEW YORK TORONTO SAN FRANCISCO AKRON WASHINGTON

ELECTRIFY ALL BUILDINGS

A Department of Up-to-date Information for all who Plan and Build

House Furnishing vs. Housing Furnishings

By M. LUCKIESCH

Director, Laboratory of Applied Science, Nela Park, Cleveland
Author of "Lighting the Home," "The Language of Color," etc.

MOST of us have had the variegated experience of "house furnishing"; that is, of purchasing for, or adapting our furniture and other furnishings to, an apartment or house. But how many have experienced the pleasure—for by contrast it is a real pleasure—of moving into a house built expressly for housing our furnishings. A relatively small percentage of what may be termed middle-class houses and apartments are built around furniture and other equipment which are so overwhelmingly responsible in realizing the final goal—that of making a house a home. Careful study of thousands of homes has convinced the writer that herein lies the most important and unfortunately the most neglected feature in house-building.

Careful Planning makes for Satisfaction

If, in designing our houses, we would give careful attention to the disposition of furniture and other equipment, much dissatisfaction, annoyance, and inconvenience would be avoided. By predetermining the position of our various articles of furniture, such as the piano, the beds, the dressers and the dressing tables, and by vividly visualizing their dimensions, we are in a position to proceed systematically to harmonize many elements of home-making into what eventually will be a satisfactory ensemble.

Even after seriously considering the disposition of furnishings the problem of interrelating the many elements of a house is not capable of a perfect solution but the final compromise will likely be about the best that is possible. After studying the disposition of at least the chief articles of furniture in the various rooms, we are in a strategic position for deciding such matters as the positions of windows, doors and radiators, the necessary wall-spaces, the swinging of doors, the types and locations of lighting fixtures, and the number and distribution of wall-switches and convenience outlets.

That this procedure is not often adopted, or at least carried out effectively, is attested to by a large majority of our so-called middle-class houses. The defects are not as generally noticeable in apartments as in houses because not many variations in apartments are possible, and as a result a considerable degree of standardization has been effected. But this is not true to the same extent in houses. Furthermore so many of our houses are "built for sale" by builders who do not intend to live in them. Therefore the details of these houses do not receive the intimate attention that they would receive by the prospective occupant provided the latter realized that a house should be built around the furniture and other equipment. This is one of the best arguments in general for building a house rather than purchasing one already built. Of course, in the latter case you have the advantage of seeing the important features such as location of windows, wall-spaces, lighting fixtures, etc., but these are not often ideal in the built-for-sale house.

Consider Both Interior and Exterior

When considering the design of a house in this manner very often the locations of doors and windows may bring forth questions as to the resulting appearance of the exterior. Here we may be obliged to settle matters by a compromise because compromises cannot be avoided where there are so many elements to reconcile and harmonize. But it is well to remember that we build a house to live in so the compromise should not be at too great expense to the interior.

For example, a small two-story house has two bedrooms across the second floor front. Four windows

Model 10—Walker Dishwasher Sink

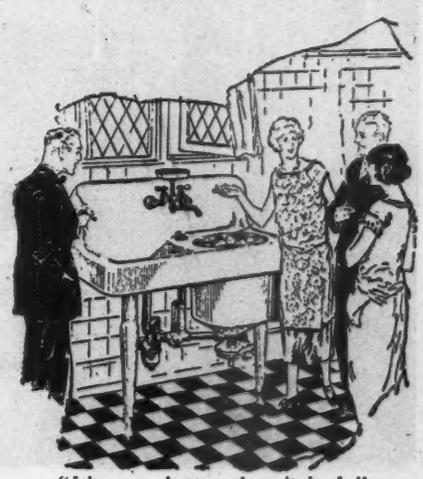
Remember—a woman's mind is influenced in direct proportion to the impression your kitchens make upon her. The positive elimination of dishwashing from her day's routine is one of the most striking sales points yet offered by the progressive building operator. Women everywhere are enthusiastic over the Walker. Good Housekeeping Institute and many leading domestic science experts, architects and builders have endorsed it. The sturdy, simple and efficient principle of the Walker is not to be confused with any other mechanical dishwashing unit on the market.

Your Kitchens Are Silent Salesmen

More and more the kitchen is becoming the deciding factor—the final influence—in determining sales of homes and apartments. A woman instinctively favors the builder who has considered her convenience, her pleasure. Here the attractive, efficient Walker provides the finishing argument. It naturally becomes a focal point of interest—the intriguing closer of many sales.

In response to National Advertising, the Combination Dishwasher-Sink idea is rapidly sweeping the country. In another year the Walker will be an accepted piece of equipment, installed everywhere. Save yourself regrets by installing it in today's operation, while it still possesses that element of surprise—of unexpected pleasure, which, in quicker rentals and sales, in decreased turnover in tenants, in the saving of hot water, in general satisfaction, quickly makes it a paying investment. With the electrical refrigerator, it completes the efficiency of the modern home and apartment. At the touch of a switch the swirling, cleansing power of hot water carries away all traces of greasy food soil, leaving the dishes clean and shining.

Our Engineering Department is prepared to make suggested layouts without obligating you in any way. We have some very attractive literature available upon request. Write for it.



"It's even better than it looks"

Walker Dishwasher Corporation, 215 Walton Street, Syracuse, N. Y.

WALKER
Dishwasher & Dryer

"Washes Dishes Cleaner Than By Hand"

may be disposed at regular intervals across the front thus leaving very little useful wall space. On the opposite sides of the rooms, closets and doorways are to be cared for. This leaves the side walls for locating the beds and to dispose of twin beds in one of these rooms of moderate size is a problem indeed. Now suppose the two windows in each room are grouped in the center of the front wall. This leaves valuable wall space at each side with plenty of room for twin beds one on each side of a pair of windows. This solution often presents more difficulty in harmonizing the elements of the exterior but the wall spaces are so important in these rooms of ordinary size that the exterior problem must be solved in some manner without sacrificing the advantage in the interior.

Study Will Solve the Problem

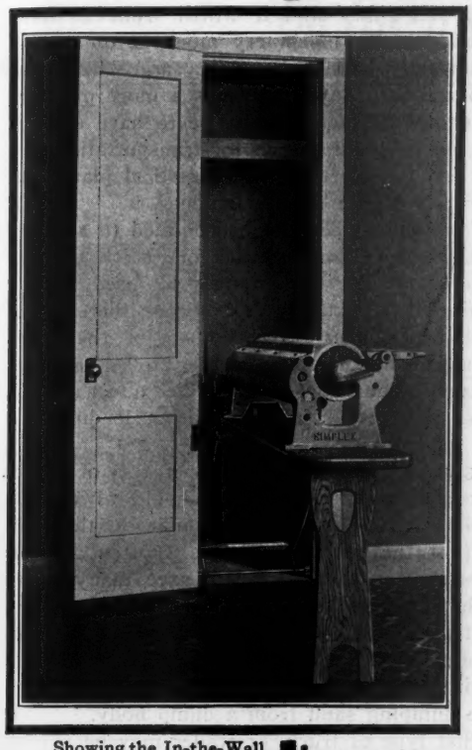
The importance of this procedure in designing a house is particularly emphasized to one who studies the wiring and lighting of a home. Laying out the wiring cannot be done wisely without first considering and arranging the furniture; still this is done every day with a resulting dissatisfaction to the eventual occupant. Of course, the ideal procedure is to have the one who is to occupy the house determine the positions of the chief articles of furniture and equipment. If this is not possible it is by no means a hopeless task for anyone with a little study and experience to locate these chief articles on the blue-prints or drawings. This is particularly true of the middle-class home for its rooms are not so large that there are more than one or two real good arrangements of furniture.

For example, in the bedroom the arrangements of the bed or beds, the dresser, the dressing-table, etc., can be worked out easily after the bed or beds have been located. Usually there is one best location for these. In this connection it is usually better to view any other article of furniture from the doorway than a bed. Such details must be visualized in laying out the furniture in the mind's eye. Having located the beds it is desirable to provide suitable wall spaces for the other articles of furniture by giving attention to doors and windows. The lighting for articles of furniture which possess mirrors can best be effected by one light source on each side. The fixtures can be wall brackets or brackets fastened to the mirror. When in doubt as to the exact position, provide an ample number of convenience outlets in the walls. The lighting may then be accomplished by means of portables or of brackets fastened to the mirror. In the modern home it is a good rule to provide many convenience outlets.

A Room Which Is Built to House Its Furnishings Gives Not Only Greater Convenience and Comfort But Also an Appearance of Unity Which Is Pleasing to the Eye.

In-the-Wall SIMPLEX IRONER

The Best Ironer



Showing the In-the-Wall SIMPLEX IRONER Ready for Use

Anticipate *HER* Wishes

Complete the kitchen by installing the In-the-Wall Simplex Ironer.

A space-saving and step-saving arrangement of the kitchen is the strongest appeal you can make to the housewife who is the deciding factor in the sale or renting of property. It is as much a part of the modern home as the stove, ice box or furnace.

The Simplex is out of the way when not in use.

It closes compactly into a space 19x20 inches.

Properly balanced—noiselessly and gently unfolds with a slight pressure of the hand.

Safe—power and heat automatically turn off when ironer is closed.

Sturdy construction, stays put, stands rigid.

Protected from dampness and dust when folded into cabinet.

Plan for a Simplex in every kitchen in all the homes and apartments you build.

Complete specifications and installation chart for your files will be furnished upon request.

Write us today.

My SIMPLEX IRONER folds or unfolds gently with a slight pressure of the hand.

AMERICAN IRONING MACHINE COMPANY

100 East Ohio Street, at Michigan Blvd.

CHICAGO, ILLINOIS

Portable lamps which may be attached to these are able, if properly designed, to solve practically any lighting problem encountered in the home.

The importance of building around furniture—housing furnishings—is evident in any of the rooms. In the kitchen, wall spaces must be provided for cupboards, range, sink, etc., and if the positions of these are determined so the work can proceed systematically, and with a minimum of "mileage," the windows, doors, lighting fixtures, switches and convenience outlets can be properly located.

In the dining room the table is usually in the center and a ceiling fixture can be provided for illuminating it. Whether or not it is to be electrically wired and a convenience outlet and signal outlet are to be placed in the floor underneath its center, are determined by the householder's desire for these modern conveniences. It has nothing to do with the determination of wall spaces but the positions of other articles of furniture are important in this respect. Here convenience outlets to which appliances and decorative portables can be attached offer a solution which provides for flexibility in arrangement and variation of the articles of furniture.

In the living room of the small house a wall space on the inside wall is usually desired for the piano if it is an upright. Then comes the consideration of the fireplace. If the householder desires a cozy arrangement of a davenport, backed by a library table, before the fireplace, it is well to consider the location of the chimney. In living rooms that are considerably longer than they are wide, say 14 feet by 25 feet, it is well to consider seriously whether the fireplace should be at the end or on one of the sides. Either arrangement may be satisfactory but it depends upon the character of the furniture and the desire for a permanent fireplace grouping. The latter in some cases causes a crowdedness if the fireplace is at the side of the room. This is something to decide only after viewing in the mind's eye various advantages and disadvantages but after it is decided one may then apply himself to the planning of windows, doors, wiring, radiators, etc.

These are a few glimpses of the importance of building a house with the idea of housing furnishings. It is the only safe manner in which to proceed, still most houses are not built upon this idea. By locating the furniture and other equipment so that these determine the positions of windows, wall spaces, the swinging of doors, the locations and types of lighting fixtures, and the location of switches and convenience outlets, the occupant of the house will enjoy the fruits of really proper planning. He will not find himself with bedrooms in which there are no satisfactory places for beds. He will not find switches and even wall brackets behind doors. He will not find perfection but he will enjoy a wise and perhaps the best compromise of many elements. He will find his mirrors properly flanked by light sources and an adequate number of convenience outlets so that portable lamps may be attached to supply proper lighting wherever the furniture is placed. He will not be perplexed with unsolvable problems of house furnishing for the essentials of the furnishing already have been taken care of. His whole house will emphasize the great value of planning it to house furnishings.

✣

Equipment for Transportation

(*Continued from page 304.*)

the size of the load handled is considered the performance compares favorably with that of trucks.

Special motor equipment for special machinery is often out of the question except for some of the largest contractors. These sometimes find it worth while to have mixers, hoists and similar machinery mounted on trucks. This makes for greatly increased mobility and where that is of prime importance it pays. Perhaps a more practical plan for the average contractor would be to have a truck onto which machinery could be run for transportation and removed at the job for use. Another practical plan is to adopt the trailer system for such machinery.

The selection of bodies need not be confined to a single type. It is possible to secure a truck on which two, or even more, interchangeable bodies may be used as the immediate requirements dictate. A body of this sort is sometimes used which may be rolled off of the truck for loading on a platform and when loaded rolled onto the truck. Under certain conditions these bodies effect a great saving as trucks need not stand idle during loading and unloading.

Idle time is always expensive in the operation of trucks and for this reason truck equipment should always be selected with the idea of keeping each unit on the road as great a part of the time as possible. Often a small additional investment in the truck will save many hours of lost time which will mean an actual saving of money. One of these time savers is a body for hauling lumber into which rollers are set. These rollers make is possible to slide an entire load of lumber off of the truck at one time, much like dumping sand from a dump body.

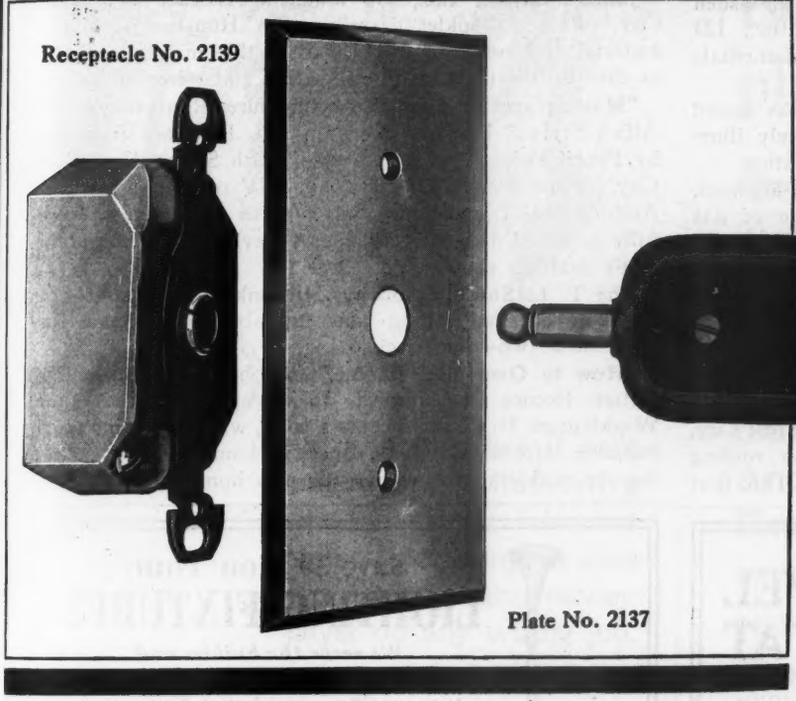
No matter what type of truck, or trailer may be needed there is one consideration which should always come before all others. That is the consideration of quality. Quality may be expensive in first cost but it is cheap in the long run. The extra cost of first class equipment is soon compensated for by the saving in upkeep. The maintenance bill on cheap equipment is always high.

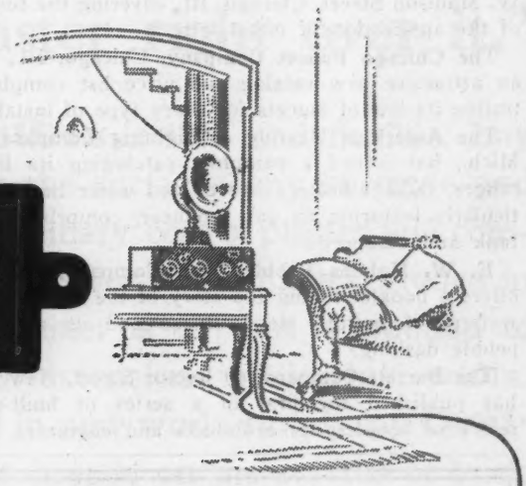
In line with this last point the man who drives the truck should be mentioned. No matter what sort of equipment is selected, the ultimate cost of transportation depends upon the driver. In his hands you place a highly expensive piece of machinery. You have no means of knowing whether it is receiving proper treatment or not till the repair bills start to come in or it falls down on the job, probably just when it is most needed. Most of the time the truck is on the road with the driver in complete charge and no one to oversee him. A poor driver or an ignorant one can qualify the best truck for the junk pile in a hurry.

Select the best driver you can get, even if he costs a little more, it will be cheaper in the long run. Then see to it that the truck receives regular inspection and is kept in perfect condition all the time. General overhauling at regular intervals saves money, and constant attention saves general overhauling. It is the old story of "an ounce of prevention is worth a pound of cure." With the high grade of materials and workmanship which is being put into automotive equipment today the truck should give satisfactory service over a long period of time, but only on condition that it is not abused and is kept in good repair.

H & H Radio Outlet

by the makers of H&H Switches





Wired into baseboards, tables or other furniture so that loud speaker or headset can be connected as handily as an electric appliance with a Convenience Outlet!

Radio Service to Every Room

THIS brings radio to every room—or to every point of *convenience*—from a central receiving set.

To every bedside in a hospital ward; to every suite in an apartment house; to hotel bedrooms and children's nurseries you can plan Radio Extensions. In clubs, restaurants, retail emporiums too, it speaks for the builder's foresight.

Wires carry from a main receiving set to the H&H Wired-in Receptacle, and the user "plugs in" with loud speaker or headset like plugging into a Convenience Outlet with an electric appliance!

Again, the Radio Outlet extends *battery* service to guests or tenants, from a central storage battery operated by the management. Write for *circular* on this great new convenience in up-to-date wiring.

THE HART & HEGEMAN MFG. CO. HARTFORD, CONN.

Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

"Muralac—in the Book-Cadillac Hotel," is a well prepared booklet, issued by Van Schaack Bros. Chemical Works, Inc., 3358 Avondale Avenue, Chicago, Ill., describing its lacquer products and giving specifications for their application as used in the new Book-Cadillac Hotel, Detroit, Mich.

Wall Coverings as manufactured by the Standard Textile Products Company, 320 Broadway, New York City, are the subject of four booklets which describe Sanitas and illustrate its application in colors. Two of these also include samples of Sanitas.

The A-B-C of Metal Lath Erection is a circular issued by the Associated Metal Lath Manufacturers, Inc., 123 W. Madison Street, Chicago, Ill., covering the fundamentals of the application of metal lath.

The Chicago Faucet Company, Chicago, Ill., has issued an attractive new catalog and price list completely illustrating its line of faucets for every type of installation.

The American Heating & Lighting Company, Morenci, Mich., has issued a pamphlet cataloging its line of gas ranges, radiant heaters, stoves and water heaters and particularly featuring its gas producer, comprising a gasoline tank and carburetor.

E. W. Holmes Pebble Dash Company, Princeton, Ill., offers a booklet telling the story of the development of its waterproof granite stone stucco and its application for pebble dashing.

The Barrett Company, 40 Rector Street, New York City, has published the first of a series of built-up roofing reference booklets for architects and engineers. This first volume covers flat roof specifications and is illustrated throughout with drawings.

"Beautiful American Gumwood," published by the Hardwood Manufacturers' Institute, 1339 Bank of Commerce Building, Memphis, Tenn., in connection with its national advertising campaign, tells the interesting story of the use of gumwood and is attractively illustrated with color plates.

"The Book of Beds," issued by the Concealed Bed Corporation, 58 E. Washington Street, Chicago, Ill., is a complete catalog of the beds manufactured by the Marshall & Stearns Co. and the Holmes Disappearing Bed Co., for which the Concealed Bed Corporation is sole distributor.

"Elements of the Modern Building and Loan Associations," by Frank A. Chase and Dr. Horace F. Clark, published by the Macmillan Company, price $3.50, is the text book used by the American Savings, Building and Loan Institute in its course of building and loan instruction.

Johns-Manville, Inc., 292 Madison Avenue, New York City, offers a booklet describing its Housline insulation material and containing a sample of this material as well as data on the method of application and effect of its use.

"Masterpieces of Spanish Architecture, Romanesque and Allied Styles," by John V. Van Pelt, has been published by Pencil Points Press, Inc., 19 E. 24th Street, New York City. Price $6.00. This is volume IV of the "Library of Architectural Documents" and contains 100 plates of carefully prepared details, sections and elevations for the architect's drafting room.

The T. L. Smith Company, Milwaukee, Wis., covers its new line of small tilting concrete mixers, developed this year, in a two-color circular.

"How to Own Your Home," is a booklet published by Better Homes in America, 1653 Pennsylvania Avenue, Washington, D. C., at 15 cents a copy, which contains much valuable information for prospective home owners, including the problem of financing the new home.

THE MARVEL THERMOSTAT

When installing a thermostat in your new home, be satisfied with none but the best. The MARVEL is accurate, dependable and ***completely automatic.***

Consider the advantages of an automatic motor, which costs no more, as compared with the spring or gravity types which require constant attention.

Building contractors are universally equipping their houses with a thermostat; buyers of up-to-date homes are demanding this convenient and coal saving device.

A Temperature Regulator is of great assistance to the builder in selling the house, as it is one of the most important of the modern appurtenances. Special and attractive prices to building contractors.

Write for Booklet "N"

American Thermostat Company
(Est. 1909)
226 Jelliff Ave. Newark, New Jersey

Save 30% on Your
LIGHTING FIXTURES

We serve the builder and know his needs

Note our Offer. Satisfaction Guaranteed.

$28.00 To the HOME BUILDER

6-room house complete—Ready to install

This series consists of

1 Porch (copper) No. 12. 1 Kitchen (white enamel) No. 9.
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1 Dining room (silver) No. 1012. 1 Bath room (white enamel) No. 2.
3 Bed rooms (ivory) No. 9. 1 Cellar Receptacle.

GOLAT ELECTRIC CO. 281 MARKET STREET NEWARK, N. J.

IF interested in any goods not mentioned here write us and we will be glad to put you in communication with the manufacturers best fitted to supply your needs.

AMERICAN BUILDER
1827 Prairie Avenue, Chicago, Ill.

Its armor makes it safe anywhere; its flexibility and the fact that it lies flat without twisting, makes it a big time and money saver on any wiring job.

"See! It's flat, lies snug on the surface without twisting, and we can plaster right over it."

Ovalflex is thin and flexible. Lay it on the surface—any surface—and the ordinary coat of plaster will completely cover it. A shallow groove in the plaster is all that is needed to make extensions in finished walls. And in new work, simply lay **Ovalflex** directly on the surface of brick or tile walls—no chipping or cutting necessary—and cover the job with plaster.

National Metal Molding Company
1439 FULTON BUILDING
PITTSBURGH, PA.
Represented in All Principal Cities (x32)

Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

"The Lehigh Magazine" is a new publication of the Lehigh Portland Cement Company, Allentown, Pa., the first issue of which appeared in March. It will be published monthly and will contain business building ideas for the building material dealer.

"Curtis Woodwork" is a new booklet just issued by the Curtis Companies Service Bureau, Clinton, Iowa, which presents the company's entire line of woodwork with sections devoted to such groups as entrances, permanent furniture, etc. It is written from the angle of the home builder and is full of information valuable to architects, contractors and building material dealers.

Toch Brothers, 110 E. Forty-second Street, New York City, offer a book of specifications for damp-proofing, waterproofing, enameling and technical painting which is full of useful information. The same company also has a series of small pamphlets covering, individually, all the different fields of paint application.

The Southern Pine Association, New Orleans, La., has prepared an attractive postcard folder for distribution to those interested in home building, which shows eleven steps in the manufacture of lumber from the standing trees to the completed home.

The Master Builders Company, Cleveland, Ohio, has prepared a folder with the A. I. A. classification, containing data on Slatyle colored slate floor. Slatyle and its method of laying are an innovation in the flooring field.

The Chicago Machinery Exchange, 1219-27 Washington Blvd., Chicago, Ill., offers a large, handsomely prepared and complete Reference Book of Woodworking Machinery and Supplies, which is a catalog of its line of products.

American Society for Testing Materials Bulletin, dated April 30, contains the plans for the annual meeting to be held in June and the provisional program of this meeting is now available.

Practical Steam, Hot Water Heating and Ventilation, by Alfred King, published by the Norman Henly Publishing Co., 2-6 W. 45th Street, New York City, has been gotten out in a new, revised and enlarged edition. Price $2.

"Plans for Concrete Houses," published by the Portland Cement Association, 111 W. Washington St., Chicago, Ill. Price $1. This is beautifully illustrated, bound book of plans, containing, in addition to plans for houses of all sizes, information on stucco finishes, building methods, roof coverings and floor construction.

The Majestic Steel Cabinet Co., 4223-31 Belle-Plaine Ave., Chicago, Ill., has prepared a second edition of its bulletin No. 20 and two new bulletins Nos. 21 and 22, which furnish descriptions and specifications for its line of cabinets for household appliances.

The Bridgeport Brass Co., Bridgeport, Conn., has just issued a second edition of its Rod-O-Graph, a convenient chart for quickly estimating weights of rod required for screw machine parts and other products made from brass rod.

Bishopric Sunfast Finish is most attractively illustrated, in colors, and described in a folder issued by the Bishopric Manufacturing Co., 216 Este Ave., Cincinnati, Ohio.

"Schramm Air Compressors," catalog C-25-A of Schramm, Inc., West Chester, Pa., is a well-prepared description of the line manufactured by this company and information on the use of its machines.

The Duro Pump & Manufacturing Co., Dayton, Ohio, has just issued three folders on the Duro Electric Water Lift, Duro Pumps, and the Duro Vertitank for rural water supply.

ALLMETAL WEATHERSTRIP

Think It Over— Carpenters— Contractors

Every day more carpenters, everywhere, are interested in this work and making it their business.

Architects Specify It — Building Owners Want It

Easy to Install—No Stock to Carry

Our prompt service makes it possible for you to start the job on time

SEND BACK THE COUPON

ALLMETAL WEATHERSTRIP CO.
231 W. ILLINOIS ST., CHICAGO, ILL.

Gentlemen:—Without obligation, please send me samples and literature.

Name.....

Address.....

City.....State.....

These HEAT WAVES show how the heat RISES and ESCAPES through the roof and walls of your house

That's what makes the snow melt so fast on your roof. Do you like to buy coal to melt snow? This is sheer waste, and you can stop it by insulating the roof and walls of your house with

CABOT'S Heat Insulating "QUILT"

You can lay Quilt under your shingles, siding, tiles or boarding, or between your studs or rafters or under your attic floor. It will save enough coal to pay for itself in two or three Winters, and keep on saving heat and doctor's bills and making you comfortable as long as the house stands.

Send for Free Sample of Quilt and full information

SAMUEL CABOT, Inc.

141 Milk Steet Boston, Mass.

342 Madison Avenue, New York
5000 Bloomingdale Ave., Chicago
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Cabot's Cresote Stains, Stucco Stains, Old Virginia White, Double-White, etc.

Call attention to the wiring

When you present a contract bid—or offer a house for sale—make a special point of the wiring. It is of lifetime importance, and if you specify a G-E system throughout, you have a big talking point of *quality*.

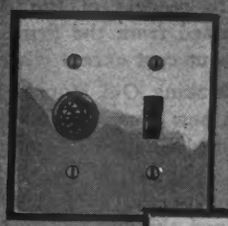
You know G-E quality. And every man or woman to whom you sell knows G-E quality. A G-E wiring system throughout adds sales value to a house. It gives your customer confidence in the thoroughness of your building job. And it places the entire responsibility for the quality of the materials upon one great company—General Electric.

Have you received our helpful booklet on complete wiring, "The Home of a Hundred Comforts"? Send for a copy.

Section AB-6
Merchandise Division
General Electric Company
Bridgeport, Connecticut

A two-color campaign in the Saturday Evening Post is paving the way for a *quality* bid instead of a *price* bid—selling the importance of a G-E wiring system throughout every building.

In a G-E Wiring System these materials mean convenience—and lifetime service.

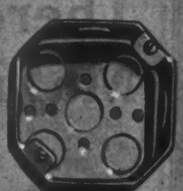


G-E Tumbler Switch with pilot to show that the current is on.

G-E Tumbler Switch—a flip of the finger works it.

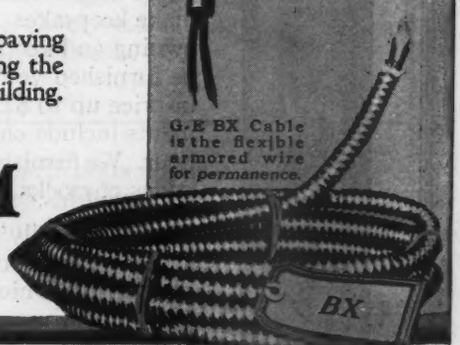
G-E Convenience Outlets sturdy for service. Plenty of outlets mean real convenience.

G-E Outlet Boxes mean protection inside your walls.



In big buildings G-E Conduit and Code Wire serve unfailingly.

G-E BX Cable is the flexible armored wire for permanence.



GE WIRING SYSTEM
—for lifetime service

GENERAL ELECTRIC

Books, Bulletins and Catalogs for You

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"Making Old Houses Into Charming Homes" is the title of a new illustrated booklet just issued by the Weatherbest Stained Shingle Company, Inc., North Tonawanda, N. Y., and Transfer, Mich. It is a complete and interesting treatment of the subject of remodeling through the use of stained shingles.

"Colonial Entrances of Character and Distinction" is the title of a handsome booklet published by Hartmann-Sanders Co., 2155 Elston Ave., Chicago, Ill. It contains full page illustrations of representative entrances of many styles with a short introductory text on the importance of the entrance.

Richard-Wilcox Manufacturing Company, Aurora, Ill., has prepared two new catalogs, No. 40, covering its line of "Sliding and Folding Partition Door Hardware," and No. 41, covering "Big Door Hardware."

The Hasklelite Manufacturing Corporation, 133 W. Washington St., Chicago, Ill., offers an interesting booklet descriptive of its moth-proof and air-tight clothes vaults which is supplemented by several valuable circulars.

"Real Estate Handbook," edited by Blake Snyder and Wilmot Lippincott and published by the McGraw Hill Book Co., Inc., 370 Seventh Avenue, New York City. Price $5.00. This book brings together the best principles, methods and data of modern real estate practice for the reference use of real estate men, property owners and others interested in the study of real estate. The material is contributed by a staff of well-known experts.

The Bryant Electric Company, Bridgeport, Conn., is sending out a circular covering its line of Pyrotite electric fuse plugs and the tests to which they are subjected.

"Pumping Machinery," the complete catalog of the American Steam Pump Company, Battle Creek, Mich., is gotten out in the form of a series of bulletins, each covering one class of pump equipment and all bound together in a single removable binder.

"Donley Book of Fireplaces." A third and enlarged edition of this booklet has just been published by the Donley Brothers Co., 13900 Miles Ave., Cleveland, Ohio. It contains much interesting material on fireplaces and their construction including working drawings and photographs and descriptions of Donley fireplace equipment.

The Celotex Company, 645 N. Michigan Ave.. Chicago, Ill., has prepared a book of specifications and details for standard building board in a size and form adapted to filing under the A. I. A. filing system.

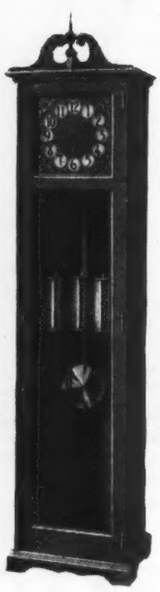
The Gurney Refrigerator Company, Fond du Lac, Wis., has issued a booklet, "How Much Does a Good Refrigerator Cost?" which describes its line of refrigerators for home installation.

"Structolite Homes" is a new publication of the United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. It contains a complete description of Structolite and its uses as well as construction details for residence construction and specifications for the construction of Structolite concrete walls and finishing with Oriental Stucco.

"The ABC of Safety Switches," Westinghouse Electric and Manufacturing Company's recent publication, contains information in regard to safety switches demanded by the specifications of the national code, the state and municipal ordinances and will be of interest to engineers, architects and operators in industrial plants.

"The Water Supply of Buildings and Rural Communities," by Walter S. L. Cleverdon, C. E., M. E., is published by D. Van Norstrand Company, 8 Warren Street, New York City. Price, $2.50. This book is written for the use of engineers, architects and property owners and covers in detail all the features to deliver water to buildings and rural communities.

There Is GOOD MONEY In Making Grandfather Clocks



Plain Colonial Pattern 6½′ x 19″ x 13″

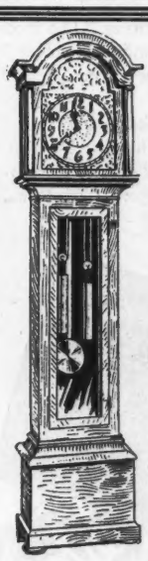
Free instructions sent, also our complete plans and specifications. Hundreds of men are turning spare time into cash. Beautiful models—easy to make. You not only want to build them for other people—you want one yourself. The old Colonial and Doric Chippendale patterns make keepsakes that everyone takes pride in owning and keeping forever. Clock works can be furnished you for as low as $5.00 and range in price up to $250.00. The higher price movements include chimes that play every quarter hour. We furnish dials and movements for many styles of clocks.

We are a family of clock makers—have been for generations. Clocks made here are found in every state in the Union and Foreign countries.

Write for catalogue of dials, works, and prices, including instructions.

AMERICAN CHIME CLOCK COMPANY
1659-1669 Ruffner St., Philadelphia, Pa.

Style No. 94 7½′ x 25″ x 14½″ Beautiful Colonial Pattern



Style No. 92 7′ x 22″ x 13″ Doric Chippendale Pattern

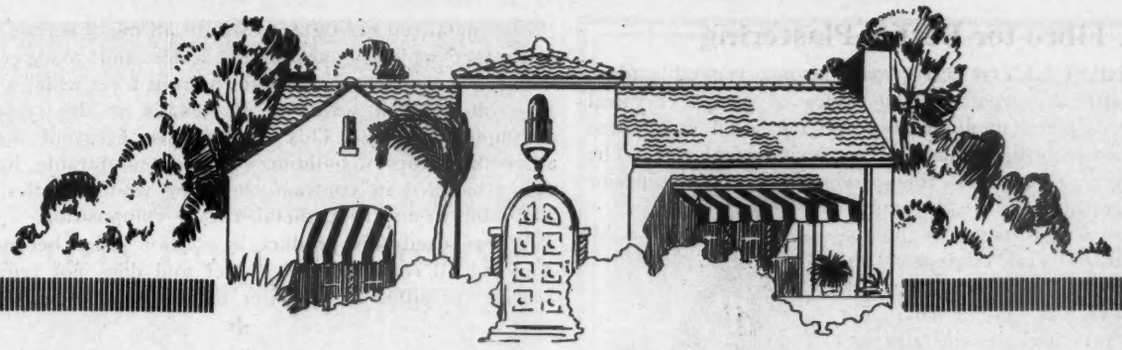
American Chime Clock Co.,
1659-1669 Ruffner St., Philadelphia, Pa.

Gentlemen: Please send me your fully illustrated catalogue and free instructions for building a Grandfather's Clock.

Name.....

Street.....

Town.....State.....



Awnings Made of Boyle's Stripes Lend A Charm!

that helps to sell that house, Mr. Builder. Boyle's Awning Stripes combine utility and beauty to an unusual degree. These high-grade awning cloths are available in a colorful variety of designs. Their long life means a positive economy.

"BAYONNE"
ROOF AND DECK CLOTH

A large number of contractors and carpenters have found that "Bayonne" as a covering for the roofs and floors of piazzas, sleeping porches, etc., has no equal. Rain and snow, sunshine and heat have no effect on "Bayonne". It is guaranteed waterproof and will not crack or buckle or peel. No white lead bedding required, yet lays flat and stays flat.

You can examine the material yourself by sending for Sample Book "P"

BOYLE'S BAYONNE ROOF AND DECK CLOTH
REG. U. S. PAT. OFF.

JOHN BOYLE & CO., INC.

ESTABLISHED 1860

112-114 Duane St. NEW YORK 70-72 Reade St.

Branch: 1317-19 Pine St., St. Louis

Note the taper of the Keystone Lock Joint clamp —that's what gives the "grip of steel"!

Let us carry out your design in

Millwork

OUR principle line of manufacturing is of "special" millwork, all suited to the architect's and owner's details and instructions. The intended effect the architect had in mind is produced from his scale drawings, by our staff of competent draftsmen, but with the added advantages of Hyde-Murphy "standard" construction. This line of work covers office buildings, theatres, churches, banks, libraries, schools and the highest classes of hotels, apartments and residences.

Our patented Keystone Lock Joint Clamp with its "grip of steel" is used on all our erected trim and cabinet work without ADDITIONAL COST to the purchaser. Your interest in Hyde-Murphy service or products will be given prompt attention. Send coupon for full information.

HYDE-MURPHY CO.

RIDGWAY, PA.

NEW YORK CITY 50 E. 42nd St. WASHINGTON, D. C Dist. Natl. Bank Bldg. PITTSBURGH, PA. 6101 Penn. Ave.

Send me full particulars about Hyde-Murphy No Warp Doors, Millwork and Cabinet work, as well as the patented erected "Keyloctrim."

Name.....

Address.....

Fibre for Better Plastering

A CAREFULLY selected, long, strong, vegetable fibre, scientifically treated by a series of secret chemical processes, is being manufactured and marketed to be used in the place of ordinary hair in the mixing of plaster. The manufacturers state that this product is greatly superior to hair for this purpose, in many ways.

According to tests, made by expert chemists and engineers, the tensile strength is more than 100 times as great as that of hair. The effect of this high tensile strength is to reduce cracks in plastered walls to a minimum and increase their durability. The same test also showed that this fibre was in no way injured by the most severe hot lime action and only to a relatively small degree affected by a treatment of caustic potash solution, whereas hair, subjected to the same caustic potash test, was badly softened and decomposed. This fibre can, therefore, be used without waiting for lime to cool.

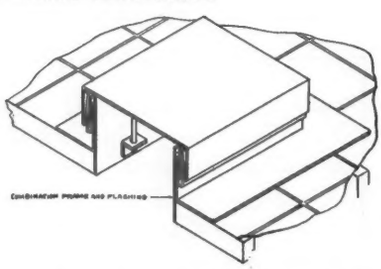
One Bag of This Specially Prepared Fibre is Sufficient for Mixing Four Barrels of Lime for Plastering. It does not require washing and possesses great strength.

This fibre is entirely clean and requires no wetting, beating, or shaking out of dust. Twenty-five ounces are sufficient for mixing one barrel of lime and a single bag will mix four barrels of lime. This reduced amount of material required reduces the cost of the plaster in spite of the fact that the fibre costs more per bag than hair. In addition there is a considerable saving of storage space, handling and trucking. On the whole the use of this material is said to be most economical.

✣

Metal Roof Scuttles

METAL roof scuttles, of a patented design, offer a number of features which should recommend them to the builder as well as the prospective home owner. These scuttles are carried in three stock sizes, 20 by 24 inches, 24 by 24 inches and 24 by 36 inches, in galvanized iron and are furnished complete including hardware. They can also be furnished in copper if desired. A glass top can be had in the same scuttle where this feature is desired.



This Metal Roof Scuttle is Thoroughly Weatherproof and is Easily Installed.

The metal top fits tightly over an all-metal frame, making a contact which is absolutely water and weather proof. The top has a clearance above the roof level which prevents the collection of water at the edges of the scuttle and consequent leaking. This scuttle is also fireproof and meets all requirements of building codes. It is durable, light and easily handled in contrast to heavy wood scuttles. It is adaptable to any roof, metal, tile or composition.

Where used this product is a labor saver because it is supplied all ready for the roofer and does not require the services of either a carpenter or tinsmith.

✣

Branding Tools and Equipment

IT DOES not pay to take a chance with your tools and equipment when the cost of marking them permanently and indisputably is so low as it is. Branded tools seldom get lost but unbranded tools constantly have to be replaced and replacing tools is an item of considerable expense to the builder. Besides the marking of tools the brand may be used for marking various pieces of equipment and in addition has a variety of other uses.

Branded Tools Will Not Be Stolen and Are Not So Likely to Get Lost. The Brand is a Good Permanent Advertisement as Well.

The self-heating branding iron is operated with gasoline, a fuel which is always readily obtainable. The gasoline is contained in the brass handle and fed to the jet through a self-cleaning and locking needle valve. Various branding plates may be secured and used interchangeably.

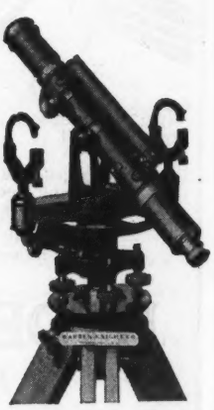
When not in use as a branding iron this torch will serve equally well as a soldering iron, paint remover, blow torch dipping cup or self skimming ladle. For any of these purposes it is only necessary to remove the branding plate and substitute the required attachment, which is obtainable at a small additional cost. The saving of tools which would otherwise be lost or stolen will, alone, pay for this torch in a short time and there is a decided advertising advantage in branded tools and equipment.

✣

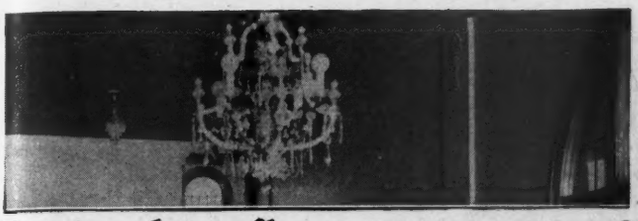
Convertible Builders' Level

TRANSITS and levels in large range of styles, adapted to all kinds of work and conditions, are available on a 10-day free trial basis. The manufacturers allow you to select the model which you believe will be more serviceable for your particular work, and send it to you to try out in the actual work, so you may know definitely whether or not you want to make the investment in an instrument which will assure accuracy.

This line includes the convertible level which is illustrated here. This is a high grade builders' level fitted with a simple device which permits the telescope to be tilted for plumbing end posts on buildings, projecting lines in any direction, squaring up buildings and all similar work.



This is a High Grade Convertible Builders Level with a Device Which Permits Tilting and Increases Its Uses.



Isn't this floor attractive?

YOU are sure to be proud of the jobs for which you specify Goodyear Rubber Flooring.

It comes in a variety of plain and blended colors which give extremely pleasing effects in shops, banks, schools, hotels, offices and homes.

Goodyear Flooring is resilient, noiseless, and comfortable underfoot. A special compounding process makes it tough, long-wearing, and easy to clean.

A further advantage of Goodyear Flooring is its absolute uniformity of size. All edges are carefully machined to assure perfect straight-line joints.

Goodyear Flooring Distributors with their soft flooring engineers will lay Goodyear Tile for you. Ask them for quotations or write Goodyear, Akron, Ohio.

Goodyear Means Good Wear

GOODYEAR

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RUBBER FLOORING

Exhibit of "R. I. W." Protective Products, The Exposition of Architecture and Allied Arts, Grand Central Palace, New York, N. Y.

Accomplishment Verified by Wide Usage Over a Long Period of Years

PERMANENCE assumes an important position in architectural calculations. It is a factor that has its economic and professional aspects, so architects place a corresponding value upon the worth of "R. I. W." Protective Products.

These are scientific protectives. As such they are accorded the honor of preserving for future generations some of the finest examples of the architect's craft. That this faith in their ability to resist disintegrating forces is not misplaced is witnessed by leaders of the profession.

R-I-W REMEMBER IT'S WATERPROOF

"R. I. W." Protective Products have the benefit of knowledge refined by experience. For over 75 years they have stood for quality —they are synonyms for all that is best in technical and scientific paints, enamels, varnishes, waterproofing and dampproofing compounds.

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Technical and Scientific Paint and Varnish Makers
Since 1848
110 EAST 42nd STREET, NEW YORK, N. Y.
Opposite Grand Central Terminal
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An Improved Heater for Small Homes

WITHIN the past year or two a new trend has been developing in the design and construction of small homes, especially bungalows. Many architects have been planning such homes without a cellar or basement, resulting in a saving to the purchaser of between $600.00 and $700.00, represented by the elimination of the basement excavation and incidental masonry and cement work.

Homes of this new type are laid out for heating by means of an above-floor furnace—the so-called "cabinet heater." This heater takes the place of two or more heating stoves as it heats on the same principle as a warm air furnace, by constant recirculation of moist, warm air throughout all connected rooms, whereas the stove heater heats by radiation.

One type of heater that is well liked, according to the manufacturers, is the joint creation of designers of fine living room furniture and of heating engineers. The cabinet is of Louis XVI period design, the product of a designer of nationally advertised living room furniture, while the heating unit is the product of the company's heating engineers.

The cabinet is vitreous enameled finish, reproducing exactly the color and natural grain of walnut; trimmings are finished in russet-bronze. The legs are of period furniture design, in keeping with the cabinet.

The manufacturers of this heater claim for it a number of exclusive features which make it very efficient in operation. It is a cabinet heater equipped with a dependable, trouble-proof, automatic heat regulator. Concealed air-cooled floor protector of patented design does away with the necessity for the old-fashioned zinc floor board, and glass caster cups under the legs protect floor and rugs against indentation.

For the Cellar-less House Which is Now Attracting Such Great Attention, This Cabinet Heater Affords an Efficient Heating Plant and Attractively Designed Piece of Furniture.

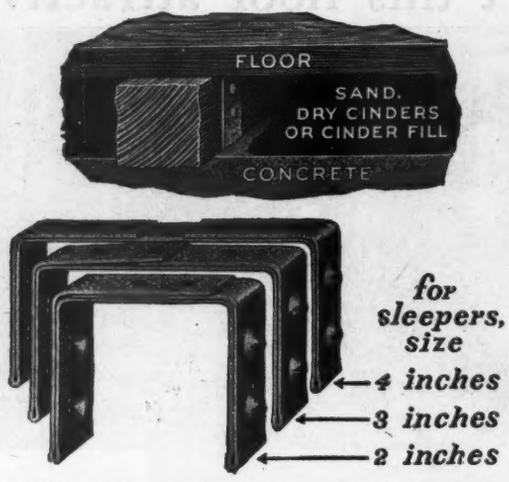
Among the other features of this cabinet heater may be mentioned its hot-blast fire-pot liners, which act as smoke and gas consumers; dust-proof ash shaker; smoke and gas-tight doors; one-piece heater casting, and absence of draft openings. Doors in the front cabinet panel are set flush, with no indication of hinges or latches, which are concealed. The smoke pipe elbow is reversible, adapted either to horizontal or vertical smoke pipe connection.

This heater, it is claimed, will heat houses of from five to seven rooms. It uses no more fuel than an ordinary heating stove of equal grate area, yet it does the work of a good pipeless furnace or two or three heating stoves.

A Small Size Floor Clip

A WELL known manufacturer of floor clips has gotten out a small size clip to supplement its regular line. This clip is the exact duplicate of the larger clip except for size. It is intended to save expense where a fill is required in floors or where a light clip will suffice.

The small clip, like the heavier one, comes in three sizes for two, three and four-inch sleepers, but is just one-half the width of the heavier clip. Both styles are made of 20-gauge, galvanized sheet metal in the two smaller sizes and of 18-gauge sheet for the four-inch size. Each clip is made of a single piece of metal bent to shape.



These Floor Clips, in Four Sizes, Are Intended for Use Where a Fill is Required or a Heavy Clip is not Needed for Any Reason.

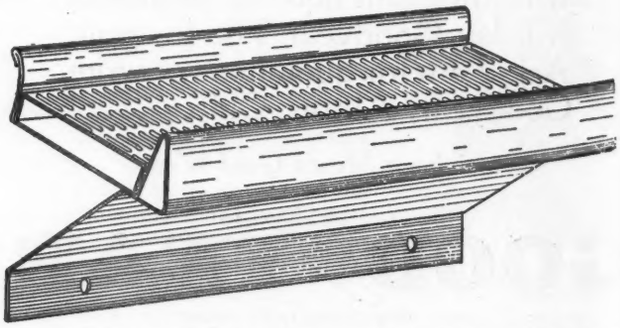
These clips are delivered with the top tabs bent flat ready to set in the concrete. They are left so till time to set the sleepers when the tabs are easily raised perpendicular, with the claw of a hammer. The sleepers are inserted between the tabs, leveled and nailed in place through holes provided in the tabs.

✣

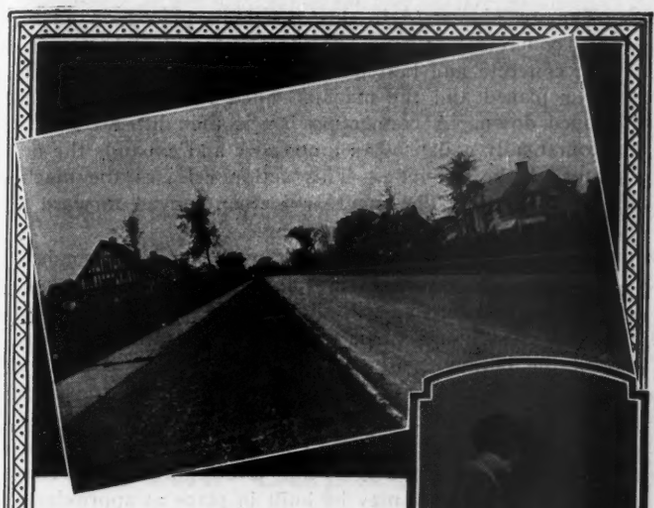
Steel Chalk Trough

STEEL is being used more and more for the interior finishing of schools because of the rough wear and tear of the daily routine. In line with this development is a steel chalk trough which is used in construction with steel trim for installing blackboards.

This trough can be firmly attached to the wall with screws and is made with a perforated tray for cleaning purposes. A down spout, with a removable cap for cleaning is included in each section. The trough is made of 20 gauge steel and is painted, making a strong, sanitary and attractive installation which will not break, warp or crack and which will catch all dust from the board and give ample space for chalk and brushes.



An All Steel Chalk Trough Will Stand Up Under the Roughest Use and Provides a Sanitary Means of Disposing of the Dust From the School Blackboards.

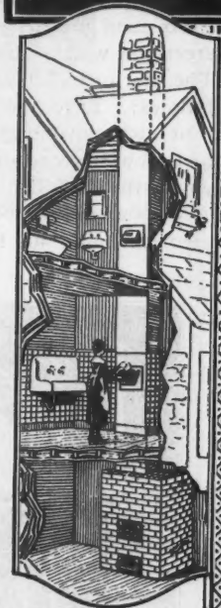


"Kernerator Avenue!"

EVERY one of the more-than-a-dozen homes shown above (Grosvenor Road, Rochester, N. Y.) is Kernerator-equipped. The nuisance of garbage and waste disposal is positively banished in just that many kitchens. There need never be a rubbish pile in any yard or basement. In short, the service a Kernerator renders makes its installation a necessity if a home is to be truly 100% convenient.

Costs Nothing to Operate

The time-tried Kernerator consists of a brick combustion chamber in the basement, with handy hopper doors on floors above. *All* waste—garbage, sweepings, tin cans, broken glassware, crockery, papers, magazines and trash—falls to the combustion chamber, where an occasional lighting consumes everything but metallic objects which are flame-sterilized and removed with ashes.



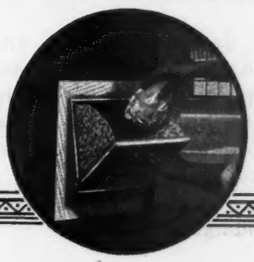
Here is a typical Kernerator installation. It costs no more than a good radio set and rids any home of the garbage nuisance forever.

The Kernerator must be built-in—cannot be installed later. Consult Sweet's (1924) pages 2536-37, or write —

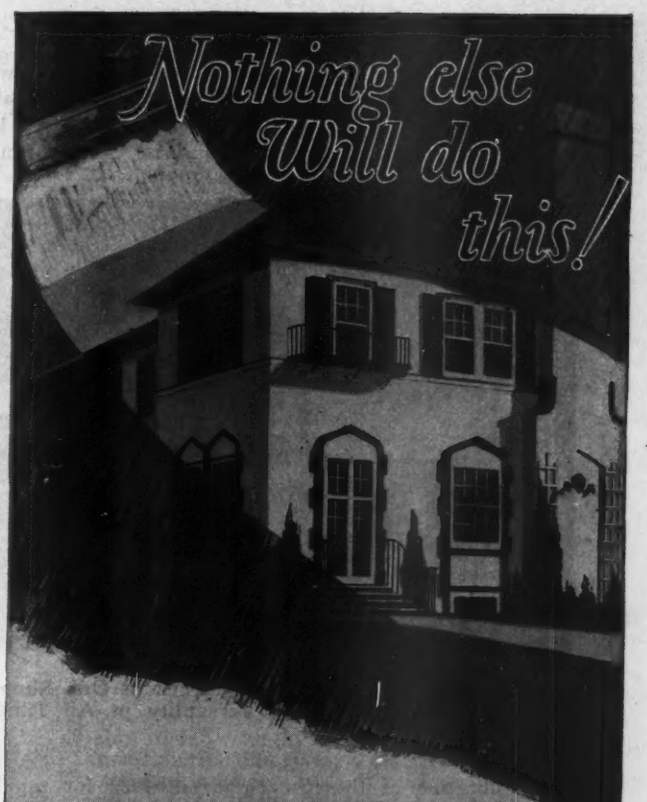
KERNER INCINERATOR COMPANY
1053 CHESTNUT STREET MILWAUKEE, WIS.

KERNERATOR
Built-in-the-Chimney
— Reg. U. S. Patent Office —

Drop all waste here



—then FORGET it!



BRIGHTEN up and waterproof your moist stucco or concrete walls! Make a dry, bright, healthful room out of that damp, mouldy basement! Mastertex will do both quickly and economically.

Mastertex *waterproofs* and *decorates* wet surfaces in one operation—no other kind of paint will do *both*.

Mastertex thrives on moisture which makes ordinary paint blister and crumble away. One complete application (two coats) will give a permanent, waterproof surface which can be washed and cleaned and which will not rub off on your clothes. Can be applied to concrete, stucco, brick, stone or any other masonry.

Restore the original beauty and freshness of your stucco house. If it's new protect it permanently against the ravages of the elements by using Mastertex. Make your basement as dry and liveable as the rest of the house—with Mastertex.

Easily applied, lasts indefinitely, costs less than oil paints—and comes in seven colors.

Send for color card and full details.

THE MASTER BUILDERS COMPANY
CLEVELAND, OHIO
Sales Offices in Ninety Cities
Factories at Cleveland, O. Irvington, N. J. and Granville, N. Y.

MASTERTEX

WATERPROOF
CEMENT
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THE MASTER BUILDERS CO.
Euclid Ave.,
Cleveland, Ohio

Gentlemen: Please send me, without obligation, complete information about Mastertex, the decorative, waterproof cement coating. We have _____ sq. ft. to be treated.

Name _____

Address _____

A Light, Versatile Woodworker

AN efficient direct driven overhead woodworker in which all cutting tools are attached on the motor shaft is shown in the accompanying illustration as used by a large manufacturer of circular brooder houses. After thoroughly

Six Portable Woodworkers at Work in One Shop Are Daily Proving Their Great Versatility in All Kinds of Work.

trying out one of these machines in 1923 for rapid cut off work on studs, rafters and general trim, this manufacturer showed his hearty approval by installing six of these woodworkers to date.

The motor shaft to which the tools are attached, being free of all encumbrances such as belts, gears, pulleys, etc., it is possible to instantly tilt the motor to any bevel desired from the horizontal to vertical. By swinging the crane to any desired miter and tilting the motors to the required bevel, a compound miter or jack rafter cut can readily be made with both material and table in a horizontal position.

With a combination saw attached the motor can be swung 90 degrees to a ripping position by means of a universal suspension bolt from which the yoke is hung without stopping the motor or changing the blade. This is a distinctive feature of this machine making it the most rapidly converted crosscut to rip and vice versa woodworker offered.

As can readily be surmised, these machines, equipped with motors from ½ to 4 H. P., have grown very popular for use in outside construction, they weighing only 245 to 260 pounds. Equipped with a 4 H. P. motor, it is a very light woodworker, handling 5-inch stock and weighing only 260 pounds complete including table.

✣

Machine Builds Double Concrete Monolithic Walls

THERE is a method of erecting double concrete walls without the customary wood or metal forms which is not a system of building concrete blocks but a system of erecting a monolithic structure, double wall from footing to roof plate, with an air space within the wall that is continuous around the perimeter of the building.

The air space within the wall makes it unnecessary to fur and lath; interior decoration may be applied directly to the wall. Furring and lathing is not necessary because dampness cannot jump the gap of the air space in the wall and affect the interior decoration. Condensation in concrete construction is due to the variation of temperature between the interior and exterior of a building. The air space within this wall acting as an insulator prevents the loss of heat through the wall and so prevents condensation.

The machine used in this system is placed on an ordinary concrete footing. The machine is filled half way up with concrete and tamped down. A horizontal reinforcing bar is placed and the machine filled to capacity and then tamped down. A connecting bar is then lifted. This bar automatically collapses an inner core and expands the outer plates of the machine. This action releases the machine from the wall. The machine is then moved forward and in position to build the next length.

The concrete, although green, will stand independently, exposed to the air on all sides and, because it is so exposed, gets an initial set that will allow a weight to be placed upon it within 1½ hours' time. The above operation is repeated until the perimeter of the building has been circled. By the time this is done the first section so cast is set sufficiently to bear the weight of the machine for the casting of another course upon it. One whole operation involves between 3 and 5 minutes of time and so in actual operation a lineal foot of wall may be built in place at approximately a foot a minute.

Any thickness of wall may be built, from double three-inch wall up, by very simple adjustment of bolts placed on sliding lateral bars of the machine for this purpose. Any mixture may be used except that the addition of water is regulated so that the mixture is never too loose nor too dry. The concrete should be of a consistency that it will mould in the hand when clenched.

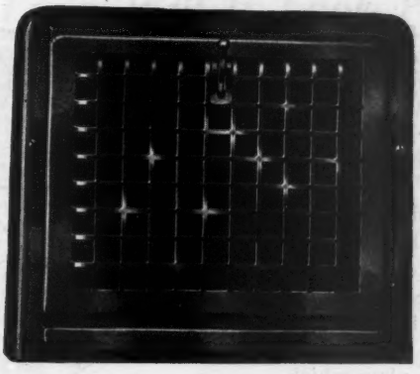
Six men are necessary to handle a set of machines and erect the wall. These six men may be unskilled laborers. The cost of building with these machines may be figured as follows: Take the day wage of an unskilled laborer in your vicinity, multiply by six and divide by 400. This will give you the cost of a lineal foot of wall. For instance, where the unskilled laborer receives $4.00 per day, the cost of a gang of six would be $24.00 per day. This gang of men can build 400 lineal feet of wall per day. 400 divided

A Steel Form in Place on a Monolithic Concrete Wall. The form has been filled and tamped and is now ready to move along to the next section.

into $24.00 per day would make approximately 6c per lineal foot of wall. This 6c represents two items—the actual manufacturing of the material and the laying in the wall. Add to this labor cost the material cost in your vicinity for two-thirds of a square foot of wall and you have the cost of the wall in place. This system is not an experiment. These machines have successfully built over 30,000 buildings.

Prompt Service Auer
CLEVELAND

Perfect Adjustment Plus Capacity



Patented

Something More to Think About

A New Size

9x12 with 3¼" flange for 10" pipe
$3.00 list price

Send for New Register Book

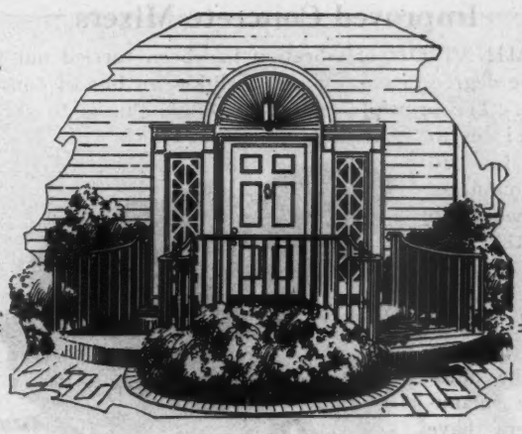
THE AUER REGISTER CO.
CLEVELAND, O.

Manufacturers

Registers of every type, size, finish to cover all the requirements for Heating and Ventilating

Also

Grilles for Radiator Enclosures



Beautify with Iron Railings

WITHOUT any appreciable addition to the cost of any new building, you can add immeasurably to the value by specifying Cincinnati Iron Railings, thus giving a touch of distinction and individuality, and transforming—"just a house"—into one that is "different."

Ornamental iron railings, fences, entrance gates and window guards of attractive, yet modest design, will enchance the beauty of any home. The dominant features of Cincinnati Iron Railings are their attractiveness of design, durability and quality construction.

Cincinnati iron and wire specialties are used extensively where the requirements call for a dependable product. They are made by skilled mechanics in a plant fully equipped with every modern appliance for the production of first quality work.

Our descriptive catalog illustrating our various products will prove of interest to all Architects, Builders and Prospective Home Owners. Send for it today. Estimates cheerfully given. Orders filled promptly.

CINCINNATI IRON FENCE COMPANY
Iron Railings for Every Purpose
3398 Spring Grove Ave. CINCINNATI, OHIO

CINCINNATI IRON FENCE CO.,
3398 Spring Grove Ave.,
CINCINNAI, OHIO

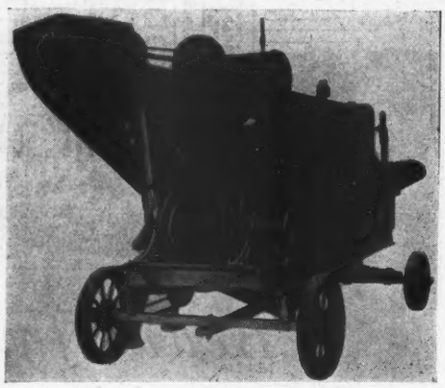
I am interested in items as checked, and would be pleased to receive your catalog giving full information.

IRON FENCE	PLAIN	☐
	ORNAMENTAL	☐
GRATINGS	CELLAR	☐
	SIDEWALK	☐
RAILINGS	STAIR	☐
	STEP	☐
	PORCH	☐
	BALCONY	☐
WINDOW GUARDS	IRON	☐
	WIRE	☐
ENTRANCE GATES	FOLDING	☐
	SWINGING	☐
IRON POLES	FLAG POLES	☐
	CLOTHES POLES	☐

Name .....
Address .....
City ..... State .....

Improved Concrete Mixers

ELIMINATION of vibration has been carried out to a fine degree in improving a well-known line of concrete mixers. The principle feature to obtain this is to get the machine to hang low to the ground; in other words to give the machine a low center of gravity. It is the same problem that the automotive manufacturers have been solving in the design of motor cars. The improvement of the mixer engine's smooth development of power has a great deal to do with keeping vibration down.



A Low Hung Mixer Which Reduces Vibration and Gives Increased Smoothness of Operation.

To further insure smoothness of operation, the machine is mounted upon a rigid and sufficiently heavy frame and axle construction. In order to insure perfect rigidity over the life of the machine, the frame is hot riveted together and amply cross membered. The axle mounting and wheels are amply oversize.

On these new models, the design and arrangement of the blades and buckets give a thorough mixed and fast discharge action, and what is very important to insure smoothness of action in this part of the machine is the careful machining of the drum tracks to perfect circles and the perfect mounting of the drum on the rollers, the rollers on the trunnions and the trunnion shafts to the frame. The trunnion bearings are mounted directly on the underside of the frame, giving the machine its low center of gravity and putting the load directly onto the frame. This does away with the extra weight of the drum cradle and any possible extra motion developing through this superfluous member. Another feature that lends itself to smooth operation is the internal expanding hoisting clutch with automatic release and brake.

✣

New, Small, Flexible Woodworker

ONE of the new machines which have been added to a well-known line of woodworking machinery is designed to meet the demand for a rugged, substantial saw table to take up a minimum floor space and to admit of the greatest possible flexibility in the matter of drive.

Small, Rugged, Flexible Is the Description of This New Woodworker Added to a Well-Known Line.

This machine may be belted direct to a mandrel from a lineshaft below the floor, or from a countershaft or a motor set to the rear. The frame is cast in one piece, insuring a steady running, rigid machine. The table is of iron, planed true, and is hinged to the rear of the frame. The front end raises and lowers as desired for cutting through different thicknesses and for changing saws.

The ripping fence opens up to admit a board up to 19 inches wide. The cutting off fence may be used on either side of the saw and may be adjusted for cutting any angle up to 45 degrees left or right bevel. Saws up to 14 inches in diameter may be used for cutting pieces up to 4 inches thickness. An 8-inch dado head will cut grooves up to 1 inch deep.

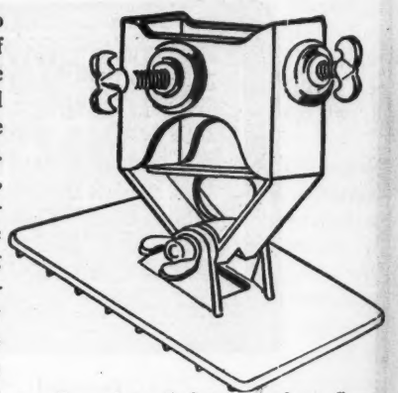
A 3 horsepower motor may be belted direct to the mandrel pulley if it is desired to drive with a motor. Each machine is furnished with one 12-inch rip saw, one ripping fence, one cut-off gauge, one spreader and one mandrel wrench.

✣

Safety Ladder Shoe

THE hazard of insecure ladder footings is eliminated by the use of a safety shoe which fits onto the feet of the ladder and gives it a firm footing on hard or uneven ground, soft mud, sand, ice-coated surfaces, cement or boards.

The shoe clamps onto the ladder by means of screws. The base plate is removed for hard ground, the sharp wedge giving a firm footing. The plate, when used, is connected by a flexible joint which can be adjusted for varying bevels while the shoe remains upright. A rubber mat is also furnished to fit onto the plate which adheres firmly to smooth surfaces and is used on cement or boards.



Complete Safety on Any Surface Is Assured by the Use of This Adjustable Ladder Shoe.

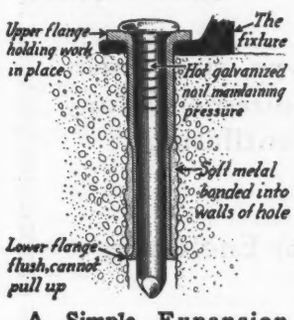
✣

A New Kind of Expansion Shield

IN this age of concrete, builders are always on the lookout for easy ways of fastening things to concrete. The practice has been to drill holes, insert screws or lag-screw shields, take a screwdriver or monkey-wrench and turn the screw home.

One company has brought out a new expansion shield that is much simpler to use. They claim that it saves fully 50 per cent of the time required in making the average installations.

The new shield permits a workman to use the work as a templet—does away with the necessity of spotting for holes and removing the work until the hole is drilled. Holes for this new shield are the same size as the holes in the fixture itself. This is a supreme advantage in installing heavy machinery.


Upper flange holding work in place
The fixture
Hot galvanized nail maintaining pressure
Soft metal bonded into walls of hole
Lower flange flush, cannot pull up

A Simple Expansion Shield Which Is Said to Be a Great Time Saver.

This shield is flanged top and bottom. Above the bottom flange is a soft metal wrap. When the shield is dropped in the hole and the nail driven home, the forced expansion bonds the soft metal wrap into the rough walls of the hole and the bottom flange clinches the side with a viselike grip—far below the surface. The nail merely expands the metal. The top flange holds the load.

How Long Will It Look Pretty?

"A GOOD long while," answers the Man Who Built It. "This isn't any flimsy, speculative house. It has Bostwick 'Truss-Loop' Metal Lath throughout. If that isn't a badge of quality, then I don't know what is.

"You can be sure you won't have any cracks in these walls, nor any falling plaster from the ceiling. You can put on fine paper and know it will stay fine. Decorating will be easier and cheaper on account of these fine, true walls. And these walls resist fire, too.

"Does it add a lot to the cost? Not so much as you think. I don't know anything that gives a whole house so much rigidity, permanence and safety—makes it so *good all through* for so little cost."

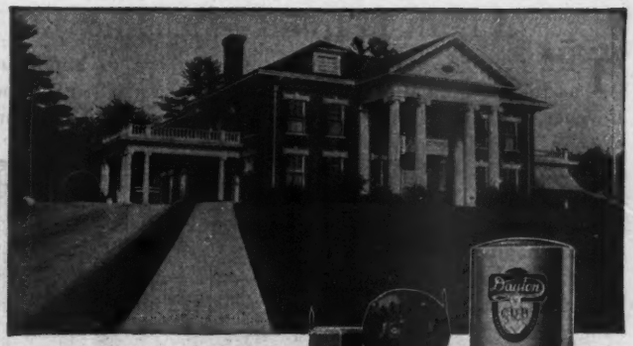
Send for Bostwick Economy, the new booklet for builders—a catalog of metal lath construction. It is free to you.

THE BOSTWICK STEEL LATH CO.
NILES, OHIO

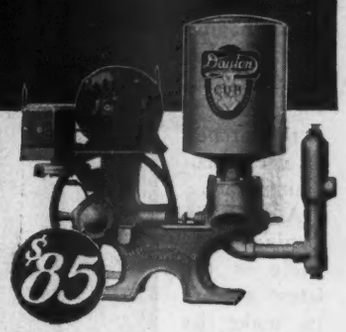
See the Loops

Participants in Better Plastering Campaign

Bostwick
TRUSS-LOOP
METAL LATH



The photograph above shows the residence of H. S. Lewis, Beaver Falls, N. Y., supplied with running water by a Dayton Automatic Water Supply System.



The cut at the right shows the new DAYTON "Cub," capacity 200 gallons per hour—an outstanding pump value.

A Water Supply System Is Only as Good as It Is DEPENDABLE.

For over 16 years Dayton water supply systems (the first made) have been famous for their satisfying service to users. A water supply system is only as good as it is dependable. Architects and builders appreciate this and prefer the Dayton for its long life, freedom from repairs and noiseless operation—but most of all for its reliable service and utter dependability.

In 16 years we have learned a lot about pumps. This experience is crystallized in the present Dayton complete line. There is a Dayton for every requirement—whether for deep or shallow wells or cisterns—in pumping capacities range from 160 gallons to 3000 gallons per hour.

Adapted for use wherever sanitation is required—in the home, school, club or any other building—the Dayton fills the bill completely and gives guaranteed service.

Our newest model, the Dayton "Cub" sells for as low as $85.00.

Write for complete information and prices on this and the "Dayton" complete line. Use the coupon for convenience.

A.B. 6-25

THE DAYTON PUMP and MFG. CO.

DAYTON, OHIO
U. S. A.

Please send at once your catalog and prices on the complete line of Dayton Water Systems.

Name.....

Address.....

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"Dayton" Pumps

Make the water do the running

A Built-in Ironing Machine

THE need to economize space is nowhere so important as in the kitchen. The day of the large kitchen is gone forever, not only from the builder's standpoint of cost, but from the woman's standpoint of saving steps and having only to reach for the thing she needs, as in the kitchen of a Pullman dining car.

A Built-In Ironing Machine Is the Latest Space-Saving Kitchen Convenience.

A built-in ironing machine is the latest feature to make its appearance. Built-in ironboards are quite common but ironing by hand is one of the most dreaded routine tasks of the housewife or maid. The ironer that reduces the labor of this task and saves from three to four hours in the bargain makes an almost irresistible appeal to the prospective tenant of an apartment or the purchaser of a home.

Many apartment buildings have a laundry in the basement, but investigation discloses these rarely, if ever, used by the tenant. Laundresses when available can often not be had on a particular day, and the housewife herself, even where she is disposed to do this job herself, will not do so where others might observe her. In the case of the home owner, she also prefers to iron in her kitchen, where she may answer the door or telephone without climbing the basement stairs and where she may better keep her children in view. Again the average kitchen is better lighted, better aired, than even a well appointed home laundry, so from every angle the built-in kitchen ironing machine is bound to appeal to women and to every builder who realizes the financial advantage to himself of catering to and anticipating her wants in a practical manner.

They are made to heat with gas or electricity, and operated with a small electric motor, both heat and power are automatically cut off when the ironer is retired to its vertical or storage position. When not in use it occupies only a little more than a square foot of space.

✣

Simple, Combination Woodworker

THE manufacturers of a certain combination woodworker claim it has fewer bearings and moving parts and performs more different and practical operations than other machines in its class. There are only three bearings in the entire machine, two of which are ball bearings.

Space in these columns would not permit listing all the operations possible with this machine if variations of the same operation such, for instance, as dadoing and plowing, jointing and planing, were listed. The makers content themselves with the statement that the machine will do all the work of any saw table, any jointer, any thickness planer, any boring table and any speed spindle within certain limits of size. Their folder illustrates twenty entirely different and practical operations, and there are many other special operations possible according to the needs of the user.

The thickness planer on this machine is a particular feature. It planes any number of pieces to the same exact thickness anywhere between 4 inches and 3/16 inch.

This machine is mounted on a heavy base with a low center of gravity, which makes for stability. The high-speed saw and cutters are all enclosed and guarded.

✣

Colored Slate Floors

BUILDERS have dreamed of a natural stone flooring in such form that it could be laid over old wood or old cement floors when such old surfaces required refinishing, or over new sub-floors without the considerable expense that a concrete base involves. The dream has been realized with the announcement of colored slate tile floors.

The material is natural colored slate—purple, grey, and green—quarried from the Vermont Hills, and furnished in the form of tiles eight inches square and three-sixteenths inches in thickness. In this form it is an entirely new product, both in the manner of its fabrication and in its application as a natural colored stone veneer for flooring purposes. Its unique method of installation makes it suitable not only for new construction, but also the ideal material for resurfacing or redecorating old floors.

Beautifully Colored Slate, in the Form of Tile, Is Now Available for Flooring Together with a Method of Setting Which Makes a Floor with Marked Advantages.

A simple but thoroughly sound method has been invented for installing this tile over either old or new floors of either fireproof or non-fireproof construction, without the use of skilled labor. expensive equipment, or loss of time. This method of installation provides the full strength necessary to support the tile firmly and to prevent breakage in service.

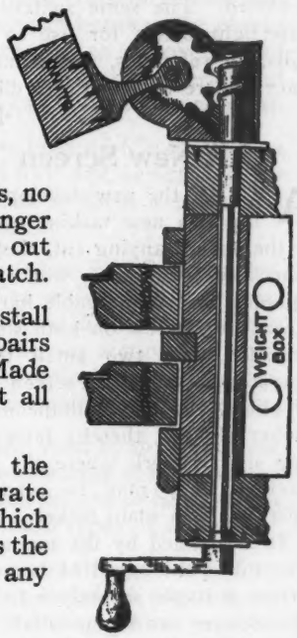
The tile is attached to the base or floor to be covered by the use of a material with the appearance and consistency of asphalt, but possessing qualities distinctive and unique. The operation of applying this material and laying the tile is simplicity itself. When the sub-floor—whether it be concrete or wood, makes no difference—is ready for finishing, the material is trowelled over it in a coat approximately one-sixteenth of an inch thick. Into the material is laid the tile according to the pattern and color schemes selected by the builder. The first tile is placed in position, the workman presses it down into the soft material which

Every colonial house should have shutters and should be equipped with Mallory Shutter Workers

MALLORY
Standard Shutter Workers

Opens and closes the shutters from the inside and automatically locks in any position.

JUST TURN THE HANDLE

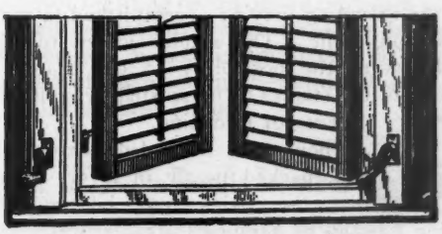


No rain splashed walls, no cold air let in, no danger of falls from leaning out to release shutter catch.

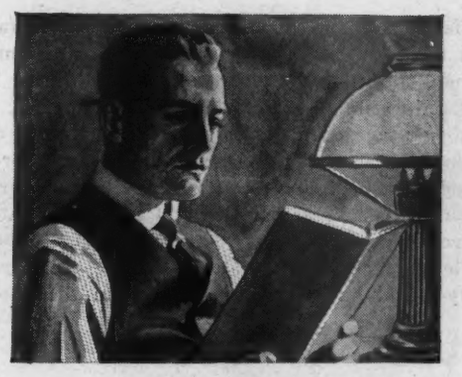
It's sightly, easy to install and so durable that repairs are never needed. Made in various sizes to fit all thickness of wall.

The MALLORY is the ideal device to operate casement windows which open outward. Locks the shutter or window in any position.

Write at once for circulars and prices



MALLORY MFG. COMPANY
314 Bloomfield Ave., Flemington, N. J.



This Man is Sure of His Job

HE SAW the handwriting on the wall. Men in his department were being dropped right and left.

He might have been the next to go but for a familiar coupon which he saw in a magazine. He tore it out, marked it, and mailed it to Scranton.

Then one day his employer called him in.

"Young man," he said, "I have just received a letter from the International Correspondence Schools telling me you have enrolled and have received a mark of 93 for your first lesson.

"I don't mind saying that this letter has saved your job. I had you on the list of men to be dropped. But I'm going to keep you now. And there are bigger things ahead of you. The man who thinks enough of his future to study his job is the kind of a man we want."

How about you? Are you sitting on the anxious bench wondering if you will be the next to go? Or are you training yourself so that you will not only be sure of your present job but will be ready for the job ahead? Your future depends on your answer.

This is all we ask: Without cost, without obligating yourself in any way, put it up to us to prove how we can help you. Just mark and mail this coupon.

TEAR OUT HERE

INTERNATIONAL CORRESPONDENCE SCHOOLS
BOX 8143-C SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, *before* which I have marked an X:

☐ ARCHITECT	☐ Navigation		
☐ Architectural Draftsman	☐ SALESMANSHIP		
☐ Reading Architects' Blue Prints	☐ ADVERTISING		
☐ Contractor and Builder	☐ Window Trimmer		
☐ Building Foreman	☐ Show Card, Sign Painting		
☐ Concrete Builder	☐ BUSINESS MANAGEMENT		
☐ Structural Engineer	☐ Private Secretary		
☐ Structural Draftsman	☐ Business Correspondent		
☐ Plumber and Steam Fitter	☐ BOOKKEEPER		
☐ Heating and Ventilation	☐ Stenographer and Typist		
☐ Plumbing Inspector	☐ Higher Accounting		
☐ Foreman Plumber	☐ COMMERCIAL LAW		
☐ Sheet Metal Worker	☐ Common School Subjects		
☐ CIVIL ENGINEER	☐ Mathematics		
☐ Surveying and Mapping	☐ GOOD ENGLISH		
☐ ELECTRICAL ENGINEER	☐ ILLUSTRATING		
☐ Electric Lighting and Rys.	☐ Railway Mail Clerk		
☐ Electric Wiring	☐ CIVIL SERVICE		
☐ Telegraph Engineer	☐ Mining Engineer		
☐ Telephone Work	☐ METALLURGY		
☐ MECHANICAL ENGINEER	☐ Gas Engine Operating		
☐ Mechanical Draftsman	☐ Textile Overseer or Supt.		
☐ Machine Shop Practice	☐ TRAFFIC MANAGER		
☐ STATIONARY ENGINEER	☐ AUTOMOBILES	☐ Spanish	
☐ CHEMIST	☐ AGRICULTURE	☐ French	
☐ Pharmacy	☐ Poultry Raising	☐ RADIO	

Name_____
Present Occupation_____ Business Address_____ 3-6-24
Street and No._____
City_____ State_____

Canadians may send this coupon to International Correspondence Schools Canadian, Limited, Montreal, Canada.

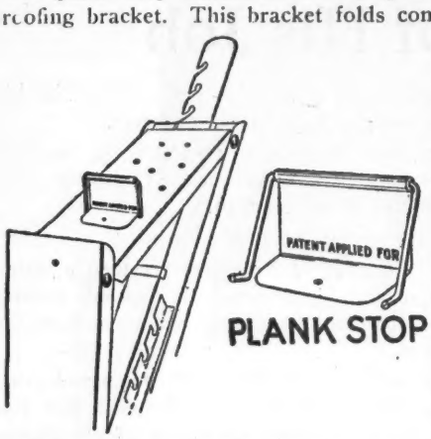
immediately adheres firmly to the lower surface. The second tile is placed a quarter inch distant from the first and then slipped up tightly against the first, leaving a perfect tight joint.

Although the setting material takes firm hold of the tile and binds it strongly to the floor beneath, providing a permanent base, it does not become hard, never loses its plastic quality. As a result it acts as a cushion, absorbing pressure from above, preventing breakage, and making the tile surface a semi-noiseless and waterproof floor. Twenty-four hours after the installation the floor may be used.

✣

Folding Metal Roof Bracket

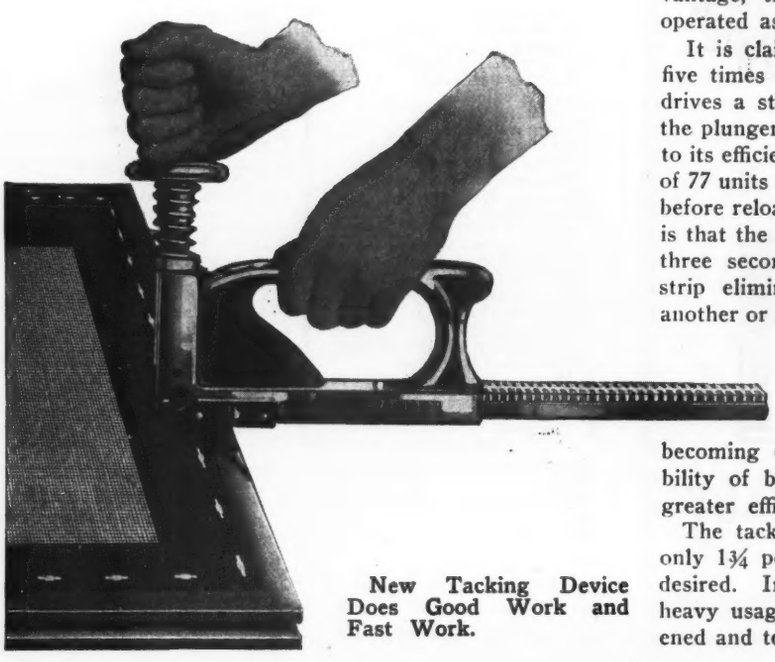
A PATENT was recently granted which covers the plank stop feature of a folding metal sheathing and roofing bracket. This bracket folds compactly for storage or transportation, but can be quickly set up and is instantly adjustable to any pitch roof. It locks, with a sliding lock into notched strips, in open position ready for use. It is supported on the roof by nails in four slotted holes in the body of the bracket and can be quickly and easily removed. It can be used for applying sheathing and all roofing materials, including Spanish tile.



This Folding Metal Roof Bracket Is Now Equipped with a Recently Patented Plank Stop Which Adds Much to Its Value.

The bracket is made of 16 and 18-gauge galvanized metal and all the die stamped parts are scientifically riveted together. Boards or planks up to 12 inches can be used with these brackets and they are guaranteed to carry any weight the workmen may pile on. The plank stop feature is easily attached or detached and is designed to retain 2 by 4, 2 by 6, or 2 by 8 planks firmly against the roof.

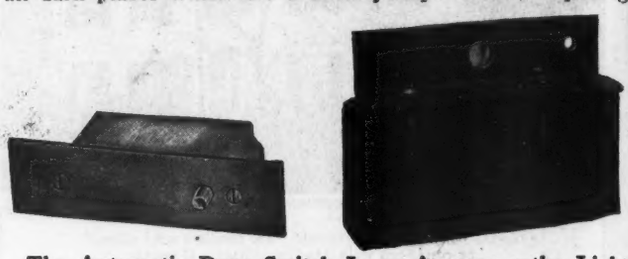
✣



New Tacking Device Does Good Work and Fast Work.

Automatic Door Switch

SOME of the mechanical appliances which make their appearance seem almost to take the place of human intelligence or even improve upon it. Such a device is an electric door switch which fits into the casing of a door, where it is out of sight, and is operated by the opening and closing of the door. It is intended to control the lights in closets, pantries, garages, attics, cellars, vestibules, and all dark places which are ordinarily kept closed. Opening the door turns on the light and closing the door extinguishes it.



The Automatic Door Switch Is an Assurance the Light Will Always Be Turned Off When Not in Use, in Closets or Other Dark Places Ordinarily Kept Closed.

This switch can be installed at any time at small expense and will soon save sufficient current to pay for itself, according to the manufacturers. Another style of the same switch turns off the light when the door is opened and closes the circuit, turning on the light, when the door is closed. The same switches are also made enclosed in watertight boxes for use in cold storage rooms, textile mills, oil refineries, dye plants, for marine use and other places where water tight or dust tight switches are required.

✣

A New Screen Tacking Device

AMONG the new developments in modern screen making is a new tacking or stapling device as illustrated in the accompanying cut, the tacker shown being designed especially for screen work. It is unique in that it is equipped with replaceable hardened steel claws fastened by means of a screw on both sides of tacker, the claws being provided with two small teeth each; these enable the operator to draw the screen into position without the use of pliers, and to simultaneously drive a staple by striking tacker plunger, thereby fastening the screen securely. On any special work where the claws cannot be used to advantage, they may be readily removed and the device operated as a plain tacker.

It is claimed by the manufacturers that this stapler has five times the speed of hammer and common tacks, as it drives a staple securely into hard or soft wood as fast as the plunger can be operated. A feature which adds greatly to its efficiency is the fact that the stapler uses a staple strip of 77 units enabling the operator to actually drive 77 staples before reloading becomes necessary. Another point claimed is that the reloading may be accomplished in approximately three seconds time. The staples joined together in one strip eliminates the possibility of one staple over-riding another or of the staples being wasted by spilling during the process of reloading.

They come in sealed boxes, 10,000 to the box, packed neatly in layers in such a way that the strips may be removed without becoming caught or tangled. This feature avoids possibility of bent strips and wasting of staples, and insures greater efficiency and satisfaction to the user.

The tacker is light and convenient to handle, weighing only 1¼ pounds, and may be carried in the hip pocket if desired. In order that the device may stand up well for heavy usage all working parts are of steel properly hardened and tempered.

Over this 600 year old Redwood, trees close to 200 years old have grown. Yet the cut shows the buried Redwood sound and free from decay.

Bridging Desert Sands with rot-resisting Redwood

AN American Sahara, just north of the Mexican line in California, is being bridged with a new type Redwood plank road, eighteen feet wide.

Less than ten years ago a solid plank road of another wood was built to keep open this southern highway to the east. But dry rot has made constant repairs necessary. Failure to leave openings between the planks has required the use of scrapers to remove drifted sand after each sandstorm. In both material and construction it has proved an expensive experiment.

The new Redwood road is built of 6″x 8″ timbers laid on the 8″ side. They are separated by 4″x 6″x 24″ spacers, placed to form a track and continuous path for vehicles.

The timbers are bolted together in 6-foot sections which are fastened together with hooks and eyes. When this road becomes buried in sand a truck with a crane will go over it, raising one section at a time, shaking it free of sand and replacing it. In a few hours' time the road will be again ready for traffic.

Redwood was selected for this road by the California State Highway Commission because it has unusual resistance to dry rot and has proved to be the most durable lumber for all exposed types of work.

Where heat and moisture foster the growth of fungus decay, Redwood remains sound. A *natural* preservative which permeates it during growth protects it—as it has protected for two centuries the buried Redwood shown here.

For all exterior building construction purposes where wood is used—especially where moisture lodges—Redwood remains sound indefinitely. Write for TPL Co. lists of Redwood lumber and millwork and for our "Construction Digest".

The Pacific Lumber Co.
Redwood

CHICAGO
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THE LARGEST MANUFACTURERS AND DISTRIBUTORS OF CALIFORNIA REDWOOD

Heat Leakage to the chimney can be avoided

A GOOD many builders find that heating difficulty and unnecessary fuel expense is caused by heat leakage to the chimney. Only a small share of the warmth directed to the rooms ever gets there because of unscientific boiler construction.

You will never experience this trouble with the thrifty Thatcher Steam or Hot Water Boiler. The special "Staggered Fire Travel" extracts all the valuable thermal units from the smoke and hot gases before allowing them to escape up the chimney. The result is heatless chimney smoke, low fuel consumption and abundant warmth throughout the house.

The Thatcher Dealers in your locality are picked men. They know how to install Thatcher Boilers correctly. You will find their cooperation a great asset in insuring heating service for the homes you build or remodel.

THE THATCHER COMPANY
Formerly Thatcher Furnace Co.
Since 1850
39-41 St. Francis St.
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BOILERS · FURNACES · RANGES

Cities Use Gas to Heat in Winter and Cool in Summer

GAS companies are solving the house heating problem by finding summer uses for gas which will equal or at least approximate the winter heating load, according to reports from Chicago, Portland, Ore., and other cities received by the American Gas Association.

Heretofore many gas companies were reluctant to take on house heating to any great extent because of the enormous strain on plant capacity which might occur during the winter as compared with the summer when no gas is used for the purpose. This would necessitate the installation of expensive gas manufacturing equipment, much of which would lie idle nearly half the time.

Reports coming in to the Association, however, indicate that there is a large potential demand for gas in the summer as well as in the winter time. Many householders and some theaters and public buildings, meat and fish markets, etc., now use gas in ammonia refrigerators or cooling plants and engineers say it is possible to cool the nation's houses through the same agency that is being increasingly used to warm them, thus keeping a building so equipped at a uniform temperature throughout the year.

The cooling effect of city gas is produced by absorbing ammonia in water, boiling off the ammonia as a gas, cooling the ammonia gas and allowing it to expand into the refrigerating coils. The expansion of the ammonia gas causes the cooling effect in the refrigerator. The ammonia is recondensed and again goes through the same cycle. City gas comes into play when burned to evaporate the ammonia gas.

Other summer loads are also being investigated by the gas companies. For one thing, it has been discovered that the production of hot dogs, pretzels and cookies, to meet the demands of picknickers, is at the highest peak during summer months. Gas is extensively used for these and many other operations.

✣

T. L. Smith's New York Office Moved

THE New York sales office of the T. L. Smith Company, of Milwaukee, has been removed from its former address at 50 Church Street, to 441 Lexington Avenue. A complete stock of this company's line of tilting and non-tilting concrete mixers is maintained by this office, being warehoused at Sedgewick Avenue and 167th Street. A service station is also maintained where all repair parts are fully stocked. Mr. B. Rider is the New York sales manager. The company also announces that Mr. G. C. Kenney will handle its sales of Smith pavers in the territory in and around Kansas City, Mo. He will maintain an office at 410 New York Life Building, Kansas City. As in the past, the Bunting Hardware and Machinery Co., which has the Smith territory in Missouri and Oklahoma, will continue handling the complete line of mixers.

✣

Takes Over Keating Flush Valve

THE Bridgeport Brass Company has taken over all the rights to the Keating Flush Valve, manufactured formerly by the Keating Valve Company, Springfield, Mass. The valve has been re-designed in its constructional details to conform to the general principles of manufacture followed by the Bridgeport Brass Company, thereby gaining the light weight, strength and density of metal that wrought brass parts possess in contrast to castings. In referring to the new valve, the Bridgeport Brass Company emphasizes the fact that the operating principles of the valve, backed by the fifteen years' experience of the Keating Valve Company, are retained intact. There will also be available the distribution and service resources of the Bridgeport Brass Company, which has manufactured and sold tubular plumbing goods and Plumrite brass pipe for the past fifty years. The company is now in the act of producing the valve in commercial quantities which will be ready for general distribution very shortly.

✣

Develop New Wall Finish

ANNOUNCEMENT has just been made by the Louisville Cement Company, of Louisville, Ky., of a new product which it is now ready to place upon the market. This product is in the nature of cement material for both interior and exterior walls and will be marketed under the trade name Walsment. The company has been experimenting with this material for several years and has found it entirely satisfactory on buildings of various types. A number of unusual qualities are credited to it.

✣

New Zinc Institute President

A. P. Cobb, vice-president of the New Jersey Zinc Company, was elected president of The American Zinc Institute for the coming year at the annual meeting in St. Louis the last week in April. Mr. Cobb has been prominent in the affairs of the Zinc Institute since its formation, having filled, until the recent election, the position of vice-president and chairman of the executive committee.

✣

Start Building at Brigantine Beach

BRIGANTINE Beach, a new ocean suburban addition to Atlantic City, N. J., will be formally opened this season. This subdivision is connected with Atlantic City by a million dollar bridge and boulevard and is within ten minutes ride by automobile from the railroad stations. Three thousand people have already bought lots, the sales totaling $5,515,000, so the subdivision is already sold out and building will begin this summer. A high standard of excellence in materials and furnishings will be set by the Brigantine Beach Home Beautiful to be constructed by the Island Development Company, of Atlantic City, which is handling this new suburb.

✣

Standard Contract Forms Ready

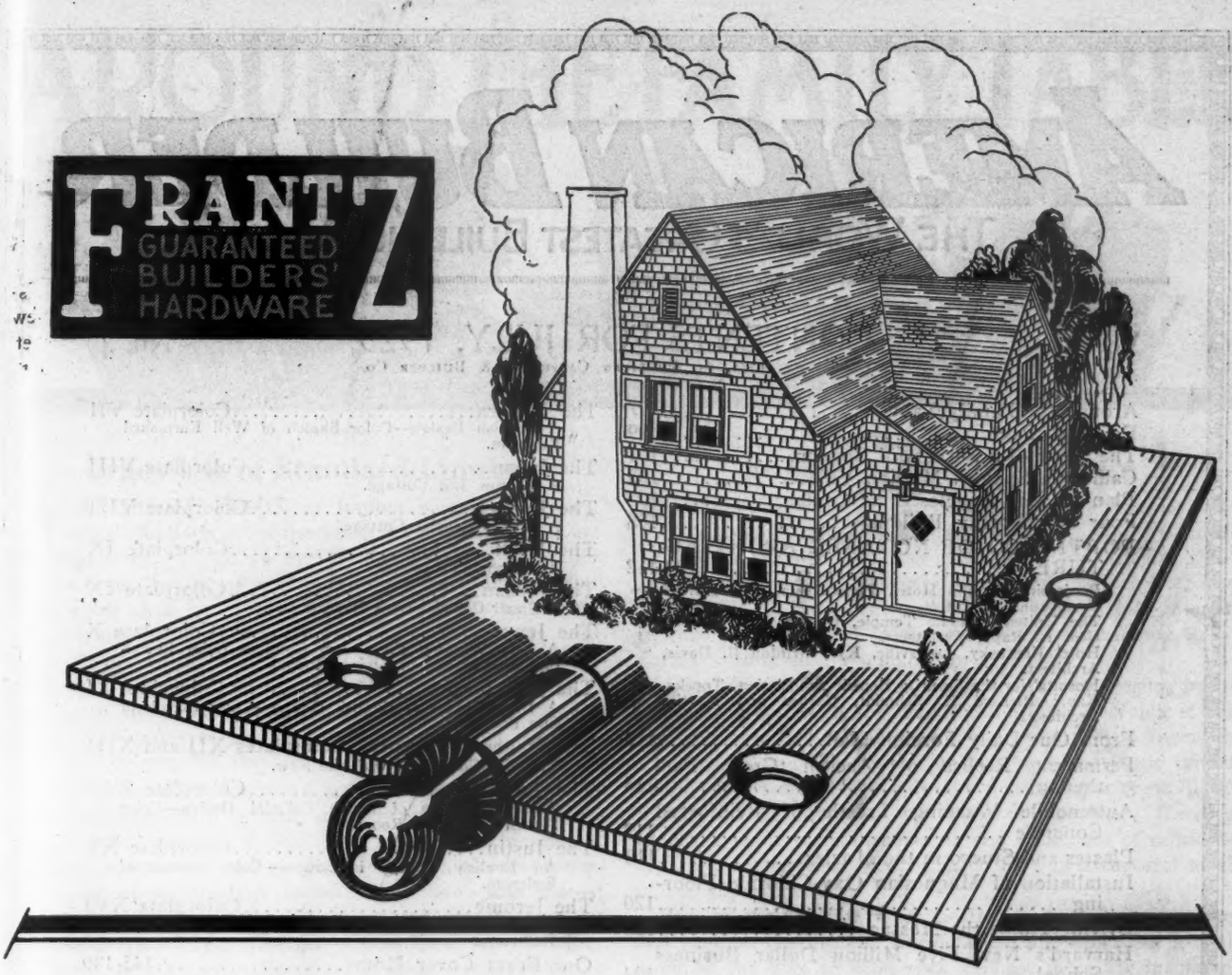
THE Associated General Contractors announce that both the building and engineering standard contract forms, as they now stand approved by the Joint Conference on Standard Contracts, are ready for distribution. The engineering form is published by the A. G. C., Munsey Bldg., Washington, D. C., while the building form is handled by the American Institute of Architects, The Octagon, Washington, D. C. These Associations are urging the adoption of the forms for all operations and ask for co-operation in spreading their use.

✣

Elect New Standard Officer

THE Standard Scale & Supply Corporation, with general offices at Pittsburgh, has announced the recent election of R. H. Chappel as treasurer and general manager.

This corporation, which is entirely new and separate from the old Standard Scale & Supply Company of Beaver Falls (now out of existence), manufacture railroad track and truck scales, the narrow drum concrete mixer and handle contractor's equipment in general. It maintains branch offices, warehouses and stores in Pittsburgh, New York, Philadelphia, Chicago and Cleveland.



Frantz Hardware—The Foundation of Better Home Building

The worth of Frantz Hardware may be accurately judged by the number of architects and builders who specify and use Frantz products. Their experienced vision of the future is the quickest and best recognition we could ask. They realize that the foundation of better home building is Frantz Hardware. Thus their selection.

Replacements are costly. There need be no replacements where Frantz hardware is used. Frantz products are built to wear. They will outlast the life of the house or building in which they are installed.

We guarantee our hardware. Write for a copy of our guarantee and catalog describing Frantz products. Use the coupon below.

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Please send free: ☐ Copy of Guarantee. ☐ Information.

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Name of your Hardware Store..... Occupation .....
Street Address.....